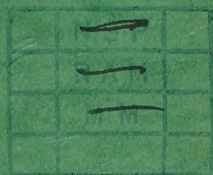


REPORT
OF THE
DEPARTMENT OF AGRICULTURE
1959



SIERRA LEONE GOVERNMENT

Price—**THREE SHILLINGS AND SIXPENCE**



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REPORT
OF THE
DEPARTMENT OF AGRICULTURE
1959

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1959-1960

1960-1961

1961-1962

1962-1963

1. The amount of output sold for the year	14.30	14.30	14.30	14.30
2. The amount of output sold for the year	14.30	14.30	14.30	14.30
3. The amount of output sold for the year	14.30	14.30	14.30	14.30
4. The amount of output sold for the year	14.30	14.30	14.30	14.30
5. The amount of output sold for the year	14.30	14.30	14.30	14.30
6. The amount of output sold for the year	14.30	14.30	14.30	14.30
7. The amount of output sold for the year	14.30	14.30	14.30	14.30
8. The amount of output sold for the year	14.30	14.30	14.30	14.30
9. The amount of output sold for the year	14.30	14.30	14.30	14.30
10. The amount of output sold for the year	14.30	14.30	14.30	14.30

1963-1964

1. The amount of output sold for the year	14.30	14.30	14.30	14.30
2. The amount of output sold for the year	14.30	14.30	14.30	14.30
3. The amount of output sold for the year	14.30	14.30	14.30	14.30
4. The amount of output sold for the year	14.30	14.30	14.30	14.30
5. The amount of output sold for the year	14.30	14.30	14.30	14.30
6. The amount of output sold for the year	14.30	14.30	14.30	14.30
7. The amount of output sold for the year	14.30	14.30	14.30	14.30
8. The amount of output sold for the year	14.30	14.30	14.30	14.30
9. The amount of output sold for the year	14.30	14.30	14.30	14.30
10. The amount of output sold for the year	14.30	14.30	14.30	14.30

1964-1965

1. The amount of output sold for the year	14.30	14.30	14.30	14.30
2. The amount of output sold for the year	14.30	14.30	14.30	14.30
3. The amount of output sold for the year	14.30	14.30	14.30	14.30
4. The amount of output sold for the year	14.30	14.30	14.30	14.30
5. The amount of output sold for the year	14.30	14.30	14.30	14.30
6. The amount of output sold for the year	14.30	14.30	14.30	14.30
7. The amount of output sold for the year	14.30	14.30	14.30	14.30
8. The amount of output sold for the year	14.30	14.30	14.30	14.30
9. The amount of output sold for the year	14.30	14.30	14.30	14.30
10. The amount of output sold for the year	14.30	14.30	14.30	14.30

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SENIOR STAFF AT 31ST DECEMBER, 1959.

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SECRETARY :

S. A. Rahman

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Plant Pathologist:

C. T. Pyne, B.Sc. (Hons.) (Wales), M. sc. (Notts.), Dip. Agric. Sci. (Cantab.).

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R. A. Stewart, A.M.I. (Mech. E.)

Chemist (Soil Surveyor):

A. R. Stobbs, B.Sc. (Hons.) (Dun.), F.R.G.S. (on secondment from Colonial Pool of Soil Surveyors).

Agricultural Chemist:

R. F. Allbrook, B.Sc. (Hons.) (Dun.); (appointed 24th December, 1959.

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Officer-in-Charge:

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R. Q. Craufurd, B.Sc. (Hons.) (Wales).

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Soil Chemists:

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M. G. R. Hart, B.Sc. (Hons.) (Notts.), Ph.D. (Lond.)

J. W. O. Jeffrey B.Sc. (Lond.)

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Superintendent of Works:

T. A. Maton.

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 D. O. Williams, B.SC. (Agric.) (Edin). Dip. Agric. (Cantab.), D.T.A. (Trinidad).

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 W. G. D. Stephen, B.SC. (Agric.) (Aberdeen); (appointed 30th December, 1959.)

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 J. P. W. Hopkins.
 W. E. A. French, C.D.A.
 J. O. P. Davies, C.D.A.
 A. R. Siafa, B.SC. (Agric.) (Wales), Dip. Agric. (Reading).
 W. J. Aboko-Cole.
 N. A. Taylor, C.D.A.

Agricultural Superintendents (Mechanical):

- J. J. F. Glass, M.I.B.A.E.

Temporary Agricultural Superintendents: (Agricultural and Mechanical)

- D. J. Watson, C.D.A.
 C. R. Elliott
 R. G. Routley.
 L. W. Dale
 J. B. Whitting, N.D.A., C.D.A.
 C. W. Oliver, N.D.A., C.D.A.

Cocoa Virus Survey Officer:

- M. B. Morphy

Stock Verifier:

- A. V. A. Harleston

REPORT OF THE DEPARTMENT OF AGRICULTURE FOR THE YEAR 1959

PART I—POLICY AND GENERAL REVIEW

There has been no major change in policy during the year, which is again summarised as follows:—

“to ensure the best land use, by conserving the productivity and fertility of the soil, and to encourage a balanced production of food and cash crops and livestock, with surpluses for export, to the best advantage of the community”.

2. The Deputy Agricultural Adviser to the Secretary of State, however, during his visit to Sierra Leone at the end of 1958 once again stressed the importance of the need for a clear statement of Government's policy. This is essential, not only because it simplifies the work of the Department itself, but also because the other departments and agencies and, indeed everyone in the country, should be able readily to ascertain what the Government's policy in major agricultural matters really is.

3. A new draft statement of policy is therefore under preparation, which will be submitted to the Government early in 1960. It is intended that this should include a clear enunciation both as to the accepted functions of the Agricultural Department as the main Government agency for implementing the overall agricultural policy, and also as to the Government's interpretation as to how the various factors affecting this policy implementation should be considered.

4. Meanwhile 1959 has seen further progress in the two significant policy changes instituted last year: (i) the encouragement of plantation development and (ii) the introduction of full advance payments for the rice mechanical ploughing scheme.

5. Additionally two other important new schemes, particularly relating to cocoa, were initiated, the one involving the participation of members of three Co-operative Marketing Societies in the first field scale spraying work to control Black Pod disease; and the other for the reinstitution of organised monkey drives with bonus payments in the cocoa areas.

6. Another new scheme is now under consideration, whereby the proven improved rice varieties emanating from the Rice Research Station at Rokupr will be multiplied up in two stages by the Department and by “master farmers” for wider distribution to producers; it is hoped thereafter to introduce a grade price differential at the mill buying centres for these improved varieties.

7. All these measures are, in themselves, examples either of how the results of essential basic research are applied through extension work for the benefit of producers or of how extension work itself can be effectively implemented towards increasing overall production and with the active co-operation of the farmers themselves. They are accordingly practical demonstrations of how the fundamental policy is being implemented, although the general public, all too often, does not necessarily appreciate this fact.

8. 1959 has, in fact, been a year when the production of agricultural commodities has generally shown small but welcome increases; nevertheless, with the country approaching Independence, there remains a very great need for this production to increase even more tangibly to assist the overall

economy. Such a policy has been stressed publicly by members of the Government on numerous occasions, and in spite of the fact that expenditure has had to remain relatively restricted, the agricultural budget has therefore deliberately been given greater freedom than other charges, and with even further assistance being provided through development funds to facilitate schemes towards increasing agricultural production in the long term.

9. Nonetheless it has to be frankly accepted that many farmers are themselves at present little interested in increasing their production, and they are apparently content with their own comparatively low income standard. The only way by which this can be altered effectively would seem to be through mass education programmes, which can also make known to them the advantages and incentives to be derived from higher production endeavour.

10. This, however, is not the case in all areas, and there are notable exceptions, particularly in the Kenema area, where the Cocoa Co-operative Marketing Societies are strong and progressive, and in the Scarcies, or where organised departmental schemes are operating as in the Torma and Bonthe areas.

11. Previous reports have referred to the continually increasing acreage which farmers are planting up to robusta coffee; this has continued despite active advice that world prices are falling, and that marketing may eventually have to be restricted. Grading regulations have meanwhile been tightened up to bring the requisite purity standards more into line with those in force in East Africa, so that Sierra Leone robusta may have a better chance in the more competitive export trade expected.

12. Despite the lower prices ruling however, the coffee exports this year reached a new high level, close on £1 million.

13. Palm kernel exports also showed a welcome increase, and it is to be hoped that this can be maintained.

14. Once again a large number of visitors were welcomed to the Department's various stations and, in particular, the official visits of President Tubman of Liberia and of Sir James Robertson, Governor-General of Nigeria, to Njala will remain especially memorable.

15. Many of the staff of the Department were also actively concerned in the preparations for the Royal Visit, both with regard to the provision and planting of flowering shrubs for Freetown and Government House, in Bo town and at the Bo Lodge garden, and at Port Loko, and also with the planning of the Royal Show and the development of the new show ground at Kenema, and in the construction of the airstrip at Kambia. Whilst joining in the pleasure at the reason for the postponement of Her Majesty's visit, there was inevitably also therefore some disappointment that a lot of hard work will now have to wait longer for fulfilment.

16. Other visitors included Mr. Haim Gevati, lately Inspector-General of Agriculture in Israel, and Mr. Y. Benor, Israeli Citrus Agronomist, as well as some of the various trade delegations to this country, and Mr. N. M. Garrard, Colonial Liaison Officer to the National Institute of Agricultural Engineering at Silsoe.

17. Meanwhile the Department itself is approaching its fiftieth Birthday, due in May, 1961, and it is perhaps not inappropriate at this time to record a little of the gratitude owed to all those who have served it well, and helped to provide the vast fund of local information and experience over the years. All of it is of inestimable value and these annual reports do, in themselves, record a remarkable story of endeavour and achievement;

whilst at times, it may be disappointing to feel that more has not been accomplished, or that so much of the available knowlegde is not being better utilised, it must equally be appreciated that, on the other hand, much has been absorbed and put into practice, without always its origin being correctly realised. No doubt perhaps St. Matthew XIII: 57 also applies.

A—THE PROVISION OF ADEQUATE FOOD FOR THE POPULATION

18. *Rice*.—In contrast to 1958, the upland rice crop was a very good one, with good burns and increased acreages, and as the yields of swamp rice were also very favourable, local production showed a sizeable increase. Nevertheless large imports were again made, partially to fill the gap created by the poor 1958 upland crop and also probably because the consumption *per capita* appears to have increased. The import tonnage of 43,305 (worth nearly £2 million) was in fact also not a fair indication of the real position in that a lot of it (8,354 tons) remained unsold and in store at the end of the year, as well as, for lack of local milling facilities, at least three years purchases of local swamp rice in the husk.

19. The completion of the policy change over to full advance ploughing fee payments in the Department's mechanical cultivation scheme led, as was anticipated, to a further reduction in the total acreage so ploughed. Nonetheless the indications are that in the 1959/60 season this trend will be reversed, because many farmers have already realised that they are "on a good thing" and can well afford to pay.

20. The acreages achieved since the scheme was instituted eleven years ago are as follows:—

District	Acres ploughed											
	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	
Southern circle	4	69	282	465	1,178	2,278	4,073	5,530	5,302	4,346	*3,788	* + 601 for co-ops
North-western circle	—	—	80	645	683	757	1,014	2,008	2,334	320	243	
South-western circle	—	—	32	719	1,018	1,012	1,173	1,484	1,606	1,015	600	
Northern Circle	—	—	—	238	915	2,449	3,600	2,819	2,625	1,504	356	*59 experi- mental
North-eastern circle	—	—	—	30	163	127	141	250		206	319	
Colony	—	—	—	—	—	4	65	}		160	44	21
Total ..	4	69	394	2,097	3,957	6,627	10,066	12,091	12,027	7,435	5,327	*Grand total 1959 5,987

21. The Co-operative Producer Societies acreage also fell, particularly at Massimo, and at Torma it was found that deeper ploughing with their Ferguson tractors in order to control weed growth entailed heavily increased and uneconomic expenditure. They are therefore proposing to follow this Department's lead in accepting Mr. Garrard's advice and obtain new Caterpillar D4 tractors for trial in this area for the next season.

22. The Agricultural Engineer's central base workshop, also on Mr. Garrard's advice, is to be moved to Kissy, where suitable buildings are being rented from the Admiralty; the move has been occasioned because of the better facilities offering and the fact that all new equipment must pass through Freetown on importation.

23. Progress with the Water Development Scheme on the Great Scarcies was satisfactory although ground conditions during the heavy rains were particularly difficult. The Funkedeh area of 1,000 acres was completed in May, but was not all immediately taken up for rice, partly because it requires time to lose toxicity, and partly because of land disputes. The excavators were then moved to Makot, and work commenced on this 4,000-acre area,—some 600 of which were completed by the end of the year.

24. All the other small scale District Council clearance schemes continued with varying, but generally reduced, demand. The Government subsidised fertiliser scheme showed decreased sales of only 60 tons superphosphate, particularly to rice farmers, this being probably because of the reduced acreage in the Makeni area, where superphosphate is of proven and specific value.

25. The Department of Commerce and Industry by the erection and near completion of the two new mills at Kissy and Torma Bum should shortly be in a position to utilise the large stocks of locally grown rice still in husk, and relieve its storage problems.

26. *Other Food Crops.*—There were no major changes in the production pattern of these crops, although the horticulturist has begun a survey to determine whether the growing of onions can be expanded in the Bullom shore area. Imports of onions and garlic again increased to £129,000 worth, being 4,413 tons.

27. *Livestock.*—*Cattle*—At a time when the Fula cattle owners of Koinadugu District are becoming willing to sell their surplus stock for slaughter, it is unfortunate that as yet no satisfactory channel for marketing them has been evolved. A Co-operative Cattle Marketing Society has been formed in Kabala, but this is meeting serious opposition from the butchers ring in Freetown, and in other areas it is finding marketing no easier but for other reasons. Inevitably this situation will have a serious effect both on the potential for development of this area, towards the goal of becoming the main reservoir for the country's meat supply, against the possible reduction in the price of meat itself to the consumer, and, of particular importance, on the future of the Cattle Owner Settlement Scheme which is consequently in jeopardy because of the resultant overstocking. A determined and joint effort to resolve the problems by all concerned would seem to be now essential.

28. *Pigs*—The demand for breeding stock particularly in the Colony area has continued to increase, but elsewhere, apart from a very few producers in the Bo area, little interest is being taken in pork production. A total of 211 head were sold for breeding or rearing during the year from Newton and Njala.

29. *Poultry*—producers, mainly in the Colony area, are both expanding their production, and also, at last, attempting to organise themselves into a producing and marketing society. The demand for breeding stock continues to be very considerable and a new Colonial Development and Welfare Scheme has therefore been submitted to obtain the funds required to instal a large modern hatchery at the Department's main centre at Newton in 1960. Egg imports maintained a high level at £27,893 for the year, and additionally 92,509 were sold for hatching, and table purposes from the Department's stations at Newton and Njala which also disposed of a total of 7,612 poultry of various ages and sizes, nearly 50 per cent being as day-olds.

B—THE CULTIVATION OF CASH AND EXPORT CROPS

30. *Cocoa*.—Exports for the calendar year totalled 2,617 tons worth £701,585 compared to 2,828 tons and £872,290 in 1958; but for the crop season 1959/60 however the actual figures again showed an increase to 2,851 tons and £715,844 compared to 2,540 tons for the 1958/59 crop season.

31. It was a particularly favourable season with a limited new acreage now coming into production; as yet however it is probably too early for the various measures now being undertaken to control monkeys and other pests and diseases to have taken effect.

32. Once again the quality was extremely good with over 99 per cent Grade I.

33. The initial cocoa virus reconnaissance survey, which was begun in June, was completed for over half the main cocoa area and revealed over one hundred possible virus infection outbreaks by the end of the year. However the vast majority of these were of the locally named "Wunde" type, which is at present thought to be due to adverse soil conditions and not to a virus. Only three were classified as being of the "Gandorhun" or "Giehun" type virus strains, and these have, to date, fortunately shown no signs of becoming virulent.

34. Nevertheless, it remains vital that the initial "recce" should be completed, and that the more detailed follow up survey should be thereafter initiated. The latter will, it is hoped, also provide valuable information not only on the other cocoa disease and pest problems, including Black Pod disease and capsid damage, but also as to soils utilisation, and as to the coffee areas in the same region.

35. The success of the Department's trials on spraying cocoa against Black Pod disease led to the introduction of the first field scale operations in conjunction with three Cocoa Marketing Co-operatives in the Kpuabu area of Kenema District. These appear to have been both economic and beneficial, and as a result it is intended to extend this programme further in 1960.

36. The Entomologist, recently appointed, has also already instituted spraying trials against capsids, which do considerable damage over a wide area.

37. The monkey drives carried out under the Department's aegis, and with the co-operation of the local authorities, resulted in the destruction of a total of 9,635 head in Kenema and 15,237 head in Pujehun and Bo districts.

38. Meanwhile good progress has been made with the establishment of the Department's new cocoa and coffee experiment station at Kpuabu, and there is already a very heavy demand from farmers for seedlings of the newly introduced Amazonian varieties; it is intended that these will, in future, be sold at 2s. each.

39. The producer prices offered by the Sierra Leone Produce Marketing Board remained unchanged throughout the season.

40. In view of the recent European trade agreements, it is somewhat alarming to note that all the 1959/60 crop was exported to the Netherlands.

41. *Coffee*.—In spite of the falling world prices, *Robusta* coffee exports reached a new high record of 4,833 tons worth £960,998; *Liberica* coffee exports were 98 tons worth £23,860, giving a total worth £984,858, compared to £895,055 and 3,347 tons in 1958.

42. Nearly two-thirds of these exports went to the United States of America, and the greater part of the remainder to the United Kingdom, and small quantities to Belgium, Denmark and the Netherlands. Most of the *Liberica* export was to the Netherlands.

43. The produce inspection regulations have now been tightened up to allow only 10 per cent impurities.

44. As yet there appears to be little immediate reaction amongst producers to the lower prices and coffee continues to be planted on an increasing scale, with overall cultivation and processing standards of a comparatively low order. The graphs appended at the end of this Report are indicative of the typical pattern of plantation yields, in that a very small percentage of trees usually carry the bulk of the crop; much could be done therefore to improve production by concentrating efforts on the better yielders.

45. *Palm Kernels*.—Exports again showed a welcome increase of 3,000 tons to 57,530, worth £3,175,621; Produce Marketing Board prices to producers were twice raised from £28 18s. 0d. per ton on the 1st May to £30 14s. 0d., and again on the 7th December to £31 12s. 0d.

46. It is however difficult to assess how much these increased prices will effect production or whether any of the numerous other factors involved are also assisting this upward trend. Certainly there is still a long way to go before it regains the level attained in the early 1950's.

47. Meanwhile a start has been made on the establishment of two new one thousand acre oil palm plantations at Sahn Malen and Kasse in Pujehun and Bo districts. These are the first steps now being taken to implement the new Government policy of encouraging plantation development, and whilst they are at present being established by the Department, a plan is currently under consideration whereby they will shortly be taken over by a new production division of the Produce Marketing Board; together with the plantations already in being at Masanki and Waterloo.

48. The Produce Marketing Board has also continued to assist District Councils by financing nurseries for the production and distribution of improved oil palm seedlings to farmers in all areas.

49. *Palm Oil*.—For the first time for some years there was no import necessary of palm oil, and the increased local production was adequate for requirements.

50. *Ginger*.—Export prices continued to be unfavourable, but the export rose nevertheless from 789 tons to 1,054, worth £102,668.

51. *Kolanuts*.—The export fell from 1,035 to 742 tons worth £111,633 with three-fifths going to Gambia.

52. *Piassava*.—The export figures for Prime Sherbro dropped by two hundred tons to 586, but rose for the lower grades by 700 tons to 4,837, in all worth £237,333.

53. *Tobacco*.—The newly registered Aureol Tobacco Company, which is erecting a factory for the manufacture of cigarettes near Wellington, has also initiated leaf production trials at Mabaibunda and Waridala near Makeni. Local farmers are, in this trial period, being provided with seedlings, considerable advice and assistance and a guaranteed minimum return. Notwithstanding this very generous offer, and thanks to perverse weather conditions, these initial trials have proved disappointing. Nonetheless it is confidently hoped that better results will be attained in future years, and that a worthwhile local cash crop industry can be evolved for this area where one has hitherto been lacking.

54. *Beeswax*.—It is of interest that the exports of this commodity showed a marked increase to total nearly 30 tons worth £11,536.

55. *General*.—As the result of the lower prices and the representations made by this Department, the export duties for both coffee and ginger were revised in November to conform to an *ad valorem* basis from a fixed rate and thus become a smaller percentage of the overall value when prices are low. The duty for coffee is now like cocoa at 10 per cent *ad valorem*, and for ginger at 5 per cent, compared to £25 and £10 per ton previously.

C—SOIL CONSERVATION

56. Apart from the small scale terracing assistance scheme in the Colony hills, and the Cattle Owner Settlement Scheme in Koinadugu District, which has as one of its objectives the prevention of overgrazing, no specific anti-erosion measures were undertaken during the year.

57. Sheet erosion, the result of shifting cultivation, continues to be an insidious but dangerous problem, for which no quick ready made solution is yet practicable. It is however evident that as a result of the third Inter African Soils Conference of C.C.T.A. at Dalaba in Guinea in November, there is a growing awareness of the importance of joint international measures being undertaken at least to protect the vital common watersheds, such as the Fouta Djallon.

D—THE QUALITY OF AGRICULTURAL PRODUCE

58. The continuing good quality of Sierra Leone cocoa has been referred to already; coffee standards, alas! are much less satisfactory, and urgently require considerable improvement.

59. Advices as to piassava standards are mixed, but in general it would appear that they have deteriorated recently, and require to regain their former levels.

E—STAFF TRAINING AND AGRICULTURAL EDUCATION

60. The Agricultural Instructors-in-Training consisted of seventeen student on first year practical attachment to circles; fifteen students, including three Gambians and one for West African Institute for Oil Palm Research in the first year at the Njala Training College, of whom four, who did not come up to standard, were retrenched at the year's end, as were three of those out of the fourteen in the second year course, who also included one Gambian and two students for W.A.I.F.O.R.

61. Of those on overseas training courses, Mr. S. A. Jabati obtained his D.T.A. at I.C.T.A. being the first Sierra Leonean so to do, and returned to take up duty as an Agricultural Officer in August. Mr. M. B. Alpha moved on to I.C.T.A. in September having obtained his Institute Diploma and an N.D. Agric. E. at Writtle.

62. Mr. E. K. Bendu unfortunately failed his first year examination at Seale Hayne and was recalled, and Messrs. A. U. Beckley and A. B. S. Turay joined A. Koroma at Seale Hayne from Brackenhurst to take the same two year C.D.A. course.

63. Messrs. E. G. Sama and D. N. Atere Roberts proceeded to the United Kingdom for their first year at the Nottinghamshire Farm Institute at Brackenhurst.

64. Mr. W. E. Taylor continued his studies for a B.Sc. (Entomology) at the Regent Street Polytechnic, and Mr. I. May Parker began his first year B.Sc. (Agriculture) at Reading. Mr. E. A. Robinson left for a practical farm year in December, prior to his following May Parker to Reading in 1960.

65. Miss. S. E. Lamboi continued her practical course on poultry farms in the St. Albans area prior to entering the West of Scotland Agricultural College in 1960.

F—RESEARCH

66. For the first time the Department now has four different Specialist Officers in post at Njala together; besides the present Plant Pathologist, an Entomologist, an Agricultural Chemist and a Systematic Botanist Ecologist have been recruited and arrived by the year's end.

67. The Plant Pathologist's work during the year has been principally concerned with Black Pod disease and virus problems of cocoa; and the Soil Chemist seconded from the pool of Colonial Soil Surveyors continued with the survey of the central bolilands which should be completed in mid 1960.

68. The Rice Research Station at Rokupr submitted a separate report on its year's work as usual, and in December the second meeting of the Advisory Committee to be held there was attended by representatives from Nigeria, Ghana, and the Gambia as well as Sierra Leone.

69. Close co-operation has been maintained both with the West African Institute for Oil Palm Research particularly through its sub-station at Njala, and also with the West African Cocoa Research Institute from which considerable advice and assistance has been obtained both as to virus disease problems and as regards the layout of experimental cocoa trials at the new Kpuabu Station.

G—GENERAL

70. Overall 1959 can be regarded as a satisfactory year, with particularly good crops of rice, cocoa and coffee and an increasing production of palm kernels. It has also seen the beginning of two new oil palm plantations, the erection of an important new rice mill at Torma Bum, the initiation of leaf tobacco growing trials by the Aureol Tobacco Company in the Makeni area, and preliminary exploration or inquiry for both extensive banana production and a pilot rubber plantation.

71. The Department incidentally seconded an Agricultural Instructor to assist both the tobacco and banana companies in their preliminary work, and also was instigational in the establishment of the new Agricultural Wages Board.

72. Field scale spraying against Black Pod disease in cocoa was attempted also for the first time, monkey drives were reinstituted with considerable success, and a preliminary cocoa virus survey was begun.

73. In other respects it has been a year of steady progress and consolidation, though generally District Councils were unable, except in a few instances, to do more agriculturally than maintain nurseries through Produce Marketing Board assistance grants.

74. The Department also completed a survey of potential agricultural development in the Kono District, for the implementation of which funds are now being provided.

75. It was unfortunately not possible for the Director to attend the Managing Committee Meetings either of the West African Institute for Oil Palm Research or the West African Cocoa Research Institute but the Plant Pathologist paid an extremely useful visit to the latter in November.

76. The Officer-in-Charge, Rice Research Station, visited Ibadan in April for the Sixth Nigerian Agricultural Technical Committee Meeting, and again to Ghana and Northern Nigeria in September and October.

77. Messrs. Stobbs (Soil Surveyor), and Jeffery (Soil Chemist Rice Research Station) accompanied Dr. H. Greene, the Tropical Soils Adviser, to the Third Inter-African Soils Conference held by the C.C.T.A. at Dalaba in Guinea in November.

78. Mr. R. S. Liney, Senior Agricultural Officer, represented Sierra Leone at the Fourth Annual Meeting of the Phytosanitary Commission for Africa South of the Sahara which was held in London in October, when the question of new and unified plant import legislation was under consideration.

79. Two new departmental pamphlets in the Farmer's Guide series were under preparation during the year, on coffee and vegetable cultivation, and a revised leaflet on cocoa fermentation was also issued, being the result of work and experience carried out over a number of years.

80. In conclusion I would wish to pay a tribute to the good work achieved throughout the Department by all staff in the year under review.

J. W. D. GOODBAN,
Director of Agriculture.

PART II—THE WORK OF THE DEPARTMENT OF AGRICULTURE

A—ORGANISATION AND STAFF

81. It is with the deepest regret that the death of Mr. R. C. Knill, Agricultural Officer, in a motor accident near Pujehun on 18th April is recorded.

82. Also of apprentice fitter Foday Sankoh who was killed in the railway accident near Rotifunk on Christmas Eve, when a number of other employees were involved.

83. Messrs. R. L. Morris and C. R. Dunton, Agricultural Officers, and Mr. J. S. Rippey, Agricultural Superintendent, resigned during the year; Mr. J. H. Kearns, Temporary Agricultural Superintendent (Mechanical), did not renew his agreement and obtained employment with the Public Works Department; Mr. J. U. Wright, Temporary Agricultural Superintendent's agreement was not renewed.

84. Mr. C. A. Gabbidon, Secretary, was promoted to Establishment Officer Public Works Department, and was replaced by the appointment on probation of Mr. S. A. Rahman.

85. The vacancy occasioned by the transfer on promotion of Mr. E. H. Nichols, Principal Agricultural Officer, to Hong Kong was filled by the promotion of Mr. J. M. Dent; and that of Agricultural Chemist by the appointment on agreement of Mr. R. F. Allbrook, *vice* Mr. C. J. Piggott.

86. Mr. D. O. Williams was promoted Senior Agricultural Officer; and Mr. J. A. C. Davies, Senior Agricultural Officer, remained throughout the year on secondment as a member of the Riot Damages Commission.

87. Mr. A. V. A. Harleston was appointed to the new post of Stock Verifier on trial, and Messrs. S. A. Jabati, A. Denness and W. G. D. Stephen were appointed Agricultural Officers; Mr. M. P. Rushton was appointed as Entomologist.

88. Mr. M. B. Morphy was appointed Cocoa Virus Survey Officer, and together with Mr. R. F. A. Murfitt organised and initiated the preliminary Cocoa Virus Survey now being undertaken from a base at Daru in the South-eastern Province.

89. Mr. A. S. Kerton, Agricultural Superintendent, proceeded on pre-retirement leave after fifteen years' service in December.

90. Mr. A. J. C. Harris was appointed Executive Officer on trial in August.

B—AGRICULTURAL STATIONS

Experimental Station, Njala:

91. *General.*—Experimental work with field crops continued with particular emphasis on groundnuts and yams, and mixed cropping of rice with cassava and beans. The continuous cropping experiment with groundnuts was continued with trials also of new varieties, on the response to fertilisers and to different dates of planting. The continuous cropping experiment was repeated and variety trials also for yams. The results of these experiments with annual crops are given in Appendix III.

92. The nursery section handled large numbers of "extension work seed" of improved oil palms supplied by the West African Institute for Oil Palm Research, Benin, Nigeria. Two consignments of seed were received, 215,000, early in the year and 289,000 in October and the best seed of the last consignment was given to the West African Institute for Oil Palm Research Substation to be germinated separately. 46,000 germinated seeds were issued to the Masanki plantation. Early in 1960 a further 90,000 germinated seeds were issued to South-western Circle, 14,500 to North-western Circle, and smaller numbers to other stations.

93. All cocoa seedlings in the nursery were transferred to the Cocoa and Coffee Development Station at Kpuabu in South-eastern Circle. 1,270 rubber seedlings were distributed to other Circles for the establishment of trial rubber plots. 196 seedlings were planted out in Block 44 of the variety Tjir 1 x Tjir 16 from Liberia.

94. Other nursery work included the nursing of ornamentals for the Royal Visit, the budding of citrus and rubber, the propagation of cocoanuts and coffee seedlings, and the establishment of suckers of Gros Michel and Poyo banana varieties. 6,706 coffee seedlings were distributed.

95. Individual yields were recorded of all coffee trees and the total Block yields are given in Appendix III. Seed samples from high yielding trees were sent to Kpuabu for propagation. Samples were sent from trees yielding over 20 lb. of wet cherry in the 1959/60 season as the season was a good one. Block 12, of one acre, yielded 3,425 lb. wet cherry equivalent to over 800 lb. of coffee beans.

96. The citrus was also yield recorded. Block 20 and part of Block 28 were planted with pineapples. 2,240 suckers were distributed.

97. *Pigs*.—The animals maintained good health during the year. A total of 226 piglets were farrowed from 25 litters, an average of 9.04 piglets per litter. There were no new importations of breeding stock. 58 animals were sold for pork, and 10 for breeding.

98. *Poultry*.—The birds did very well during the greater part of the year but during the last quarter their health reflected the shortage of high protein food in the diet. The condition of the young chicks fell off very considerably and many died. Postmortem examination revealed that apart from the protein deficiency there was a high incidence of worm infestation. The poorest birds were culled, the rest dosed with coopane and their diet deficiency corrected. By the end of the year, there were signs of general recovery. There was a drop in the fertility of hatching eggs to 78.6 per cent, hatchability to 68.3 per cent and rearability to 66.9 per cent.

99. Five thousand two hundred and seventy-seven chicks were hatched during the year, and of these 724 birds were supplied to other Agricultural Stations at 6 weeks old for sale to farmers; 608 were sold on the station. The flock of ducks did not thrive and only 112 ducklings were hatched during the year. No sales for breeding were made but 73 birds were sold for table use.

100. *Rabbits*.—At the beginning of the year there were 48 rabbits in rabbitry, but by the end of the year the number had increased to 77. 133 rabbits were born, 32 died, and 51 were sold for breeding.

Experimental Station, Newton:

101. *General*.—Except for a slight increase in emphasis on pigs and poultry, work continued along the lines of previous years.

102. *Cattle*.—The health of the cattle was satisfactory. Ten calves were born with an average birthweight of 33 lb. A shortage of fodder towards the end of the year was a result of the failure successfully to re-establish heavily grazed areas in 1958. One bull and 2 heifers were sent to Musaia.

103. *Pigs*.—The health of the pigs gave cause for concern in the early part of the year, during which time seven of the best sows died. The cause of death was diagnosed as trypanosomiasis by the Veterinary Department and the herd was treated with antrycide methylsulphate at 50 per cent above the standard dose. Ten days later half the herd was treated with antrycide chloride, and the other half left untreated. The health of the herd has subsequently improved very considerably.

104. Total sales were 13 mature pigs and 188 weaners, all sold as potential breeding stock. This is a record for the station, and reflects the rapid expansion which is taken place in local pig farming. Considerably fewer pigs—only 45—were sold for pork.

105. Feeding trials comparing different types of animal protein foods were carried out.

106. *Poultry*.—There was a slight decrease in the sales of poultry during the year. 3,391 birds were sold as day-old chicks, 200 at 6 to 8 weeks and 1,400 growers and adults. These figures reflect the major economic importance of poultry husbandry in the Colony Circle. Demand far exceeded supply and therefore the incubation capacity is being increased. Because the Department has been unable to meet large orders of 1,000 chicks and over, many farmers are now rearing day-old chicks as routine practice and some are importing their own stock.

107. The practice of selling sex-linked crosses was continued, the chief crosses being Rhode Island Red by Light Sussex, Brown Leghorn by Light Sussex and Brown Leghorn by Rhode Island Red.

108. Owing to the heavy demand for day-old chicks and growers, six "Hearson 20" incubators were purchased and put into operation. The number of chicks hatched was increased from 10,908 to 14,190. Average fertility improved at 76.4 per cent, but hatchability and rearability fell to 71.9 per cent and 66.6 per cent respectively. Egg production rose even higher than the last year's record of 89,259 to 123,039 eggs of which 30,000 were incubated, 2,732 sold for hatching and 85,000 sold for table use.

109. The duck flock remained healthy throughout the year, and production from the Aylesbury and Khaki Campbell flocks was very satisfactory. Records have shown that the Khaki Campbells are more prolific egg producers, whereas the Aylesbury is a much better general purpose duck than the Muscovy; the Aylesbury is hardier and reaches a dressed table weight of 6 lb. in 9 weeks whereas the Muscovy takes 14 weeks to reach this weight.

110. The rearing of Chinese Gees was discontinued because of continued low egg production, fertility and hatchability.

111. *Rabbits*.—The health of the rabbits remained satisfactory but fertility was poor; only 80 kids were kindled, but mortality fell from 10.8 per cent to 10.2 per cent.

112. *Model Holding*.—The new tenant after a few months lost his initial enthusiasm. He later improved and has shown signs of being able to put the holding on a commercial basis. He was able to pay for the stock loaned to him when he first settled on the holding. He sold 4 pigs for pork and three weaners for breeding. His stock at the end of the year remained the same.

113. *Tree Crops*.—The recording of yields of all oil palms in the station continued, and the fruits were processed or sold locally. The total weight of fruit bunches harvested from 3,190 palms was 226,158 lb. Routine maintenance of the citrus, avocado pear, cashew and coconut blocks was done by the Caldwell bush hog, the Hayter rotary scythe, and a Wolseley super swipe.

114. *Annual Crops and Grassland*.—Work on annual crops was reduced, although a fertiliser placement experiment to determine the response of cassava to treatment with superphosphate and superphosphate plus potash was laid down. The fertiliser applications were made at 1 cwt. per acre, placed above the set and approximately 1" below the surface of the soil. Yield results will be calculated when the crop is harvested. Replanting of the paddocks in the livestock section with Pangola grass, *Digitaria decumbens*, was continued in order to rehabilitate the area after the heavy grazing of the last five years.

115. *Intensive Valley Cultivation*.—Demonstration of intensive valley cultivation for market garden crops continued to be carried out in the East Valley. The previous years' routine of rice in the wet season and vegetables in the dry season was maintained. Old pineapple beds were uprooted and plants used to produce suckers for the large-scale plantings to be made in 1960. 4,688 lb. of pineapple fruits were harvested but no shipments to the United Kingdom were made for the Christmas market as sucker propagation was given priority at the end of the year.

Animal Husbandry Station, Musaia:

116. *Cattle*.—Policy continued along the established lines aimed to obtain an early maturing beef strain of Ndama type cattle by selection and breeding. High incidence of internal parasites resulted in poor average weights obtained by each age group. Liver fluke gave the most trouble, but routine dosing with a proprietary drug containing hexachlorethane and phenothiazine proved beneficial, and by the end of the year the health of the herd was much improved. The cattle continued as last year to be run in three herds.

117. Twenty-seven calves, 18 of which were reared up to weaning age were born. Average birth weight fell to 33.7 lb. The low number of calves born was due to the fact that the majority of the cows had calved late in 1958. 28 animals of all ages died during the year. At the end of the year the stock stood at 243 animals.

118. A new policy for the station was the running of bulls with the cows earlier in the year, from 1st April, with the hope that the first flush of grass with the early rains would improve conception. The bulls were marked and services recorded daily. By the end of the year 96 out of 102 cows were recorded as having been served. Routine inoculation against the more common diseases was carried out.

119. *Sheep*.—Again helminthiasis proved troublesome in the early part of the year, and 8 ewes and 6 lambs died at this time. To prevent wet season lambing, rams were kept apart from the ewes during March to June. The result of this procedure is awaited with interest. 23 lambs were born and 1 ram purchased locally. At the end of the year the head of stock stood at 44.

120. *Poultry*.—A slight reduction at the start of the year had to be made, due to the lack of fish meal. This was made good later in the year when a supply was received, and the incubators were working to capacity to meet demands for chicks. A deep litter shed holding 200 birds was erected on contract with local materials. 494 birds were sold for breeding, and 7,274 eggs were laid of which 1,986 were incubated. Average fertility was 74.6 per cent and hatchability 68.1 per cent. The number of stock stood at 581 birds at the end of the year. 30 Aylesbury ducklings were received from Newton to augment the small number of Muscovy ducks on the station.

121. *Maintenance*.—Maintenance of old and erection of new fencing continued, and the breeding programme is now safeguarded. Sufficient fencing to give adequate rotation of grazing areas is however still not available.

122. *Pasture Work*.—Fifteen acres of cover crop (mixed *Pueraria* and *Centrosema*) were planted; germination was good particularly in the areas where seed treated with sulphuric acid before planting was used. This cover crop should produce useful fodder in January just before the early burned grass produces new growth. The grazing trial was completed but the live-weight increases of the experimental animals were not statistically significant although differences between length of grazing periods were highly significant. The trial showed the persistence of *Brachiaria mutica*, and that it is a useful grass when planted on land with a reasonably high water table. Seed of the following selections of pasture grasses were received from Kenya for multiplication, *Panicum maximum* Sigor K52530, *Panicum coloratum* K52490, *Chloris gayana* Entebbe K51903 and *Chloris gayana* Umbarrara K53160.

C—HORTICULTURAL SECTION

123. *General*.—The policy of the section, the stimulation of the production of horticultural crops in all parts of the country by improved methods of cultivation and modern techniques was continued. Advice and assistance was given to growers on the improvement not only in quantity but also in the quality of the crops. Seeds and plants continued to be made available to the public at nominal prices and demonstrations of planting and after-cultivation were given on horticultural stations and individual private small holdings.

124. Extension work activity continued to expand in the Provinces, and a temporary nursery was established at Bo to help meet the local demand. New vegetable and fruit varieties were introduced and tested, and also proprietary brands of fertilisers and insecticides, before being released or recommended to growers. Horticultural surveys to determine the potential and existing horticultural activity were carried out in the Makeni, Kenema and Bullof areas. The results of these surveys, will be used to determine the further extension of the advisory service of this section in the Provinces.

125. *New England Horticultural Station*.—The section headquarters received many visitors during the year, including several from overseas. Further extension of the station by the construction of additional terraces and roadways was made, the former serving as an additional soil conservation demonstration on the very steeply sloping land on which the station is established. Other improvements included reroofing of the main plant house, using "Dexion" and "Polythene" instead of the more traditional glass and timber. The establishment, for observation, of new varieties of economic plants continued and additions of several species new to the country were made to the botanical collection.

126. *Lumley Horticultural Sub-station*.—The propagation of economic and fruit trees on this station continued, and large quantities of citrus, mangoes, pineapple and miscellaneous fruit trees were produced. The completion of additional contour terraces extended the area available for the growing of budded citrus. The irrigation system was also extended to serve this area. Introductions from Liberia and Guinea of mangoes, rubber and citrus were made and established successfully. The swamp land continued to be utilised for rice growing.

127. *Regent Nursery*.—The nursery continued to function as an advisory centre for the Mountain Districts, and also as a nursery for the propagation of economic plants. Successful demonstration of three different terracing techniques for the prevention of erosion from the steep slopes on which the nursery is established was carried out. Vegetable variety trials continued and successful proven varieties selected and distributed.

128. *Kabala Horticultural Sub-station*.—The station continued to function as an advisory centre for the Kabala area, as a unit for the production of fruit trees, and a centre for a distribution of fertilisers, insecticides and seeds. The original layout of the vegetable section was modified so that the new terraces run on the contour and not on a formal rectangular plan. Mechanical aids to cultivation were fully employed and demonstrations on the use of machinery to reduce labour costs were given to local market gardeners.

129. *Bo*.—A temporary nursery, established this year, was devoted mainly to the propagation of planting material for distribution in the Bo area for the Royal Visit. Terracing of the upland portion of the station was begun as a demonstration of soil conservation technique.

130. *Distribution of Planting Material.*—The general upward trend in the sales of planting materials excluding cuttings and seedlings (not in baskets), since 1952 is shown in the following table:—

				<i>Economic Plants</i>	<i>Ornamental Plants</i>
1952	..	..	..	796	460
1953	..	..	..	1,599	870
1954	..	..	..	3,898	1,970
1955	..	..	..	4,244	6,760
1956	..	..	..	3,547	6,916
1957	..	..	..	4,585	7,502
1958	..	..	..	3,367	6,504
1959	..	..	..	8,651	6,682

The large increase in the number of plants distributed has been principally due to the fact that the station at Kabala is now also producing appreciable quantities of economic trees.

Seedlings of vegetables, fruits and ornamental plants distributed numbered 9,712, and 4,111 cuttings were also supplied.

131. Vegetable seeds were supplied on a more reduced scale, as the policy has been to continue to encourage local growers to produce their own seed. 9,085 packets of vegetable seeds were distributed.

132. *Plant Introductions.*—72 new introductions were made, either as seeds or plants, of which 31 were successfully established.

133. *Experimental Work.*—Varietal trials were continued and vegetable varieties tested and recorded at the various horticultural stations. A spring onion variety "Bawku" introduced from Northern Ghana has proved very successful showing a ready production of fertile seed. Other trials included varieties of radish and water melon received from Japan. A variety of radish introduced in 1957 continued to produce abundant seed at Kabala. Fertiliser experiments on various vegetable crops at Kabala were continued. Work on "bacterial wilt" of tomatoes combined with an investigation of the varietal origin of Sierra Leone varieties and their relationship to South American species was continued.

134. *Extension Work.*—Extension staff stationed in the Provinces continued to advise market gardeners and fruit growers. A satisfactory increase in the interest shown in the growing of vegetable crops was noted especially at Bo, where a women's co-operative had adopted vegetable production as a part of its activities. 3,396 lb. of fertiliser and 313 lb. of insecticide were distributed during the year.

135. *Terracing Scheme.*—Assistance continued to be given to farmers who wish to terrace their land in the Mountain Districts where soil erosion is a constant problem. A total of 2,170 yards of terrace wall was constructed by the 18 farmers assisted.

136. *Horticultural Show.*—The Eighth Horticultural Show, organised by the Sierra Leone Horticultural Society with the assistance of the Horticultural Section was held at the Wilberforce Memorial Hall. The Show continued to be very popular and attracted an even larger crowd than in previous years.

137. *Technical Propaganda.*—The distribution of Horticultural Notes continued; this series now contains 20 pamphlets and deals with horticultural crops generally, including details of insect and disease control, fertiliser application and general principles of cultivation. Many of these notes have been incorporated in the "Vegetable Growers Guide" to be published in 1960.

D—WATER CONTROL SECTION

138. *General*.—Field work started in 1958 under a scheme to reclaim large areas of swampland in the Scarcies area for rice cultivation by improving drainage conditions and allowing free tidal wash using modern plant to construct the drainage channels. Excellent progress was made in 1959 and the area reclaimed now totals 1,600 acres and a proportion of this has been planted. This is part of the first stage of the programme to develop 5,000 acres of potential rice lands at Funkedeh and Yakban.

139. The Irrigation and Drainage Engineer was also responsible for polders at Mapotolon, Bakepet and Maswari. The construction of the headquarters of the section at Makot was completed.

140. *Funkedeh and Yakban Swamp*.—All work at Funkedeh was completed by the end of May and a total of 1,000 acres of rice land made available for cultivation. The Priestman dragline excavators were then transferred to the Makot section of the Yakban swamp and by December, the Makot outfall, 7,500 ft. of main drain and 8,852 ft. of side drain had been completed. Ground conditions during the rains were exceptionally difficult. However by the end of the year over 600 acres of the Yakban project was completed; under this project a total of 4,000 acres will be developed.

141. *Investigations for future Development*.—Gauging of the head waters of the Maseba Creek was completed by the end of the year. A print lay-down of the area was received prepared by the Directorate of Overseas Surveys and a project plan for the drainage of the area is being prepared. An aerial survey plan from the same source of the Rhombe swamp area to a scale of 1/16000 was also received. Stick water level gauges to record flood heights were set up as a preliminary to the setting up of "automato" tide gauges. The Rhombe swamp is 22,000 acres in extent and Colonial Development and Welfare funds have been approved to make possible a thorough investigation of the area and the preparation of a plan for its development.

E—EXTENSION WORK

SOUTH-WESTERN CIRCLE (PUJEHUN-BO-MOYAMBA)

142. *General*.—With the completion of the major buildings and installations at the mechanical cultivation sub-station at Gbundapi, it was possible to plan and execute more efficiently the mechanical side of the scheme; this was amply borne out by the fact that, fewer break-downs occurred.

143. *Rice*.—Unlike the previous year, rainfall was more or less normal, and the acreage under all types of rice increased. Good burns were obtained on the upland and all land cleared was worked. The seed rice farm at Mandu had to be transferred to Gbuyama for local political reasons. The acreage at the new site was increased to 8 and in addition to the two varieties, Toma and Bolo, planted last year, two others, Faya and Radin China 4, were added. Growth was good and yields satisfactory.

144. *Mechanical Cultivation*.—The introduction and enforcement of the "full payment in advance" policy resulted in a further drop in the acreage worked, it was only possible therefore to do work on three of the original seven sites. A total of 600 acres were ploughed, taken up by farmers and planted. The Co-operative Society ploughed and allocated 480 acres for its members. Weather conditions were favourable, and very little rice was spoiled by unfavourable climatic conditions. Yields on the whole were good.

145. *Cocoa*.—Interest in the cultivation of this crop was maintained, and advice continued to be given to farmers about the layout and upkeep of plantations and the preparation of the crop for marketing. A total of 7,861 cocoa seedlings was distributed to farmers from District Council nurseries. The drop from last year's figure—11,720 seedlings—was the result of the policy to dissuade farmers from growing cocoa in Moyamba District which on the whole is not so suitable for the crop. The distribution figures for each District over the past four years is shown in the table:—

					1956	1957	1958	1959
Pujehun	..	..	..	..	2,975	—	1,151	3,423
Bo	..	..	..	..	1,993	2,737	850	2,693
Moyamba	..	..	..	..	573	2,672	9,729	1,745
					5,541	5,409	11,720	7,861

146. Damage by monkeys continued to be extensive; monkey drives were organised and resulted in the killing of 15,237. No serious damage due to Black Pod disease *Phytophthora palmivora*, or to capsids was seen.

147. *Amazonian Cocoa Introductions*.—The plantation at Futa was maintained, and 162 pods yielding 4,468 seeds were harvested. The seeds obtained were planted out in the Pujehun nursery. Due however to heavy rainfall 475 failed to germinate. Growth of the surviving seedlings was good, and they should be ready for distribution in 1960.

148. *Coffee*.—Interest continued high in all areas in the Circle, and a total of 84,930 seedlings were distributed from the three District Council nurseries. Propaganda to get farmers to grow their own seedlings was started. This it is hoped will reduce the number of seedlings grown in the nurseries and give Instructors more time for other extension work. Coffee stem borer, *Bixadus sierricola*, continued to be troublesome in all areas.

149. *Piassava*.—The low price being offered for this crop does not appear to have affected output and quality. Quite large shipments continued to be made out of the area, especially in the south of Pujehun District, where it furnishes the main source of income for some farmers.

150. *Oil Palms*.—The establishment of two large plantations in the Circle has given a much needed stimulus to local farmers. The number of seedlings distributed was 22,962 as compared with 8,561 in 1958.

151. *Oil Palm Development Projects*.—The Pioneer Oil mills at Sahn and Kangha had their best season during 1959, purchasing a record quantity of palm fruit. Work on the Establishment of the two 1,000-acre oil palm plantations at Sahn and Kangha proceeded actively. The two nurseries laid down were enlarged and improved E.W.S. seedlings from Njala were planted. Work started on the clearing of the sites for the plantation, and the construction of access roads and buildings. The Gbaama plantation, a project of the Bo District Council was extended and a total of 44½ acres is now under oil palms.

152. *Masanki Oil Palm Plantation*.—Work on the replanting of this plantation continued along the same lines as in previous year, under the supervision of Agricultural Officer (Colony); 112 acres were replanted with E.W.S. seedlings bringing the total area replanted to 369 acres. The nurseries were maintained and extended, and 25,408 E.W.S. germinated seeds were received from Njala and nursed. The seedlings now in the nurseries should be sufficient to plant the remaining 631 acres to be replanted under this project.

153. *Rubber*.—As a follow up to the reconnaissance by the Chemist and Agricultural Officer in 1958, a one-acre plot of rubber was established on a site at Gofor near Zimmi. 196 seedlings of variety Tjir 1 x 16 raised from seed supplied by the Firestone Company of Liberia were planted and are doing well. A similar site was also chosen in Moyamba District in an area near Moyamba town to be planted in 1960.

154. *Livestock*.—Interest in livestock, especially pigs, was maintained and with the help of Development of Industries Board loans, two of the most progressive pigkeepers were able to extend and improve their piggeries.

NORTH-WESTERN CIRCLE (PORT LOKO-SCARCIES)

155. *General*.—Work on the main buildings and layout at the mechanical sub-station at Katonga, and also at the office and quarters at Port Loko was completed. Extension work was intensified with propaganda on poultry, use of fertilisers, improved plant varieties and other aspects of agricultural development. Advice was given to the District Councils on the upkeep of oil palm nurseries and the trial establishment of oil palm plantations on *Lophira* type land was continued.

156. *Mechanical Cultivation*.—A further drop from 320 in 1958 to 243 acres in 1959 was recorded, being largely due to the introduction of the "full payment in advance" policy. This small acreage was scattered over 13 sites and not surprisingly resulted in a doubling of the costs per acre over the last year's figures. River transport of tractors and implements was again done on a "drum pontoon", as the launch "Oryza" was undergoing repairs. Efforts continued to be made to collect outstanding ploughing fees, a considerable amount being collected with the help of Co-operative Societies.

157. *Development of Lophira Bush*.—*Oil Palms*—Routine maintenance including brushing and ring weeding, on both the plots at Malal and Katonga was carried out. All seedlings are now fitted with wire collars, and no replacements were necessary as no damage by rodents was suffered.

Growth of the palms on the Katonga plantation was satisfactory and some of the trees began fruiting. Negotiations are continuing to handover this plantation to local farmers. Distribution of seedlings from District Council nurseries continued and 5,807 oil palm seedlings were issued to farmers in the Circle.

158. *Livestock*.—To meet the high demand for 6 week-old chicks, a small brooder unit was built at Port Loko. This, it is hoped, will enable a supply of chickens to be held at all times. A total of 90 pairs of 6 week-old chicks was distributed.

159. *Mangrove Clearance*.—The acreage cleared at Rowal rose to 90 acres, but of these only 32 acres were planted, as farmers had not paid rent due for acreages allocated in 1958. Again the digging out of "kiri-kiri" grass, *Paspalum vaginatum* restricted the working of larger areas of land.

SOUTH-EASTERN CIRCLE (KENEMA-KAILAHUN-KONO)

160. *General*.—Junior Staff continued to be assigned to the three District Councils, to carry out extension work on oil palm, cocoa and coffee establishments and to advise generally on the preparation of these crops for market. Apart from these duties, with the implementation of the Kono development plan, staff were posted to that area to commence work on the agricultural programme. A Cocoa Virus Survey Officer was recruited and posted for duty at Daru.

161. *Rice*.—Increased cultivation of inland swamp rice continued to be encouraged, and migration from traditional upland farming and poor “burns” stimulated swamp rice farming. The farms at Kenema, Segbwema, Manowa, Kailahun and Waiima for the multiplication of seed rice continued to be operated. The value of superphosphate fertiliser was demonstrated, and a further increase in sales of this fertiliser was recorded.

162. *Cocoa*.—The acreage under this crop continued to increase, and a large number of new farms were laid down. Farmers have shown great interest and are willing to accept the advice and assistance of the departmental staff on selection of site, planting, maintenance, control of pests and diseases and preparation of the crop for sale. New loans were made under the Co-operative Department's cocoa loans scheme to society members whose farms had been inspected and approved by the Department of Agriculture. Plantation hygiene has shown a general improvement as a result of propaganda by extension staff.

163. The bulk of the country's cocoa crop is produced in South-eastern Province. The table below shows the number of bags of cocoa sealed and graded by the Produce Inspection Branch at the eight buying centres in the Circle in the 1958/59 and 1959/60 seasons.

					<i>Number of bags of Cocoa sealed</i>	
					<i>1958/59</i>	<i>1959/60</i>
Blama	..	..	..	..	1,968	2,275
Kenema	..	..	..	..	7,265	10,219
Hangha	..	..	..	..	4,343	5,913
Segbwema	..	..	..	..	9,806	12,714
Daru	..	..	..	..	3,197	5,484
Pendembu	..	..	..	..	2,288	9,336
Kailahun	..	..	..	..	2,889	5,167
Baiima	..	..	..	..	—	3,528

164. The total purchases of cocoa by the Produce Marketing Board in the 1959/60 season was 3,346 tons compared with 2,565 tons in 1958/59. At the end of the season a deterioration in quality occurred at the Pendembu and Daru buying centres due to the admixture of improperly fermented cocoa from Liberia and a total of 186 bags were sealed as Grade II and 30 bags as Grade III. The rest of the crop was Grade I.

165. Monkey drives were held in Kenema and Kailahun districts, a bonus of 1s. 6d. per head being made; the results were somewhat disappointing as a total of only 9,635 monkeys were killed.

166. Trials being carried out by the Plant Pathologist on the control of Black Pod disease by spraying were put on a “field” basis, and three Co-operative Societies in Gaura Chieftdom were able to spray their members' farms. The results have been most encouraging and this scheme will be extended to cover a large number of societies in 1960.

167. A preliminary survey to determine the extent and incidence of the virus disease discovered in 1958 at Gandorhun and Geihun was started. This preliminary reconnaissance survey is being financed by the Produce Marketing Board. Funds are being sought for an intensive follow-up survey to commence in 1960.

168. *Coffee*. Interest continued to be maintained in the crop and a number of new farms were put down. In spite of advice to the contrary, farmers are still inclined to harvest and dry both ripe and unripe cherries at the same time although such a practice can only lead to an inferior quality.

Both the berry borer and the large stem borer *Bixadus sierricola* White, continued to give cause for concern as their rapid multiplication and incidence throughout the coffee area is now evident. The export tonnage of coffee in 1959 was 4,938 tons compared with 3,344 tons in 1958. Despite the fall in price it is apparent that a further increase in the quantity exported will be made with the 1960 crop which developed well during the year.

169. *Oil Palms*.—No great interest was shown in this crop, and production of kernels and palm oil was at a low level. Distribution of seedlings from the District Council nurseries was much lower than the previous year's figure. Maintenance of the Senahun and Worodu plantations continued.

170. *Cocoa and Coffee Development Station*.—*Kpuabu*.—The Cocoa and Coffee Development Station was established in 1957 under Colonial Development and Welfare Scheme D3055. The area of the station is 165 acres and during the year the station was laid out in 1-acre blocks demarcated by concrete pillars at the corners. There are two distinct soil types, a terrace soil mainly lateritic gravel and an alluvial soil along the Keyi Stream.

A propagator for the production of cocoa seedlings and a fermentary were built and the construction of a cocoa drying shed with four retractable platforms, an insectary and an implement shed was started, the rest-house was furnished. In the early part of the year the office and store, fuel store, and two Agricultural Instructors quarters were completed.

171. In 1959 5,229 cocoa seedlings, approximately 10 acres of cocoa, were planted. The acreage of cocoa and coffee planted and the experiments laid down since the station was opened are shown below:—(All the Amazonian seed was supplied by the West African Cocoa Research Institute, Ghana).

(a) Cocoa.	1957	2.5 acres	Amazonian F 3
	1958	2.4 acres	Amazonian F 2
	1959	Variety trial reference 40/41 June.	

This trial was designed to compare hand pollinated varieties growing on lateritic upland soil. The seedlings were raised at Njala from seed imported in September/October/December, 1958 and the varieties included were IID, IG, IJ, IQ, IIK, IIN, IP and local Amelonado as a control. The trial consists of four replications of plots of 16 seedlings of each variety; each plot contains four sub-plots of four seedlings derived from a single pod.

1959 variety trial reference 135/140 June 1959. This is a rerandomised repeat of trial 40/41 on the alluvial soil along the streamside.

1959 variety trial reference 107 June. This trial contains the varieties IIA, IID, IIE, IIF, IG, IJ and IM, and is laid down on upland soil. There are four replications of plots of 9 seedlings of each variety.

1959 time of planting trials references 98/June and 107/June. These trials compare three dates of planting and also seedlings planted with a ball of earth against naked roots. Amelonado seedlings were used and the trials were laid down on both soil types.

1959 hand pollinated varieties surplus to the requirements for experiments were planted in Blocks 30, 31 and 131.

1959 Amazonian F2 seedlings grown from seed imported in December, 1957 and January, 1958 were planted near the 1958 planting making a total of 6 acres of F 2 Amazonian cocoa. A further planting in Blocks 127 and 12A was made of seedlings derived from seed received in October/December, 1958.

172. (b) *Coffee*.—*Local Coffee*—Four acres of coffee were taken over with the station and yield recording of this has been started.

1959. Two acres of coffee were planted. Seedlings were from seed of high yielding trees.

1959. A time of planting trial with three dates of planting was laid down.

173. Two hundred pods of F2 Amazonian cocoa were received in November and the seed nursed in wire baskets and polythene pots in the nursery. Seed of *Tabebuia pentaphylla*, a shade tree, was also nursed. Trials of various soil mixtures for potting and of various types of pot were also made.

174. One thousand and sixty cocoa seedlings were distributed to farmers. There is a very heavy demand for Amazonian seedlings and farmers have been quick to appreciate the vigorous habit and early bearing of these Amazonian introductions.

SOUTHERN CIRCLE (BONTHE)

175. *Mangrove Swamp Reclamation*.—The District Council Clearance Scheme which started in 1952 continued; a further 10 acres of previously felled mangrove was cleared, and 50 acres of cleared land allocated to farmers. About 160 acres remained unallocated and unworked. The areas unworked had been abandoned by the farmers to whom it had been allocated because of fear of monkey and fish damage.

176. *Rice Trials*.—*Mechanical Cultivation Sites*—*Sewa Area (a)*—A number of variety trials, basically the same as those conducted last year were carried out on Makita and Mayeke sites. The varieties used were Radin China 4, Pia Gazo, Seri Raja and Anak Didek. Anak Didek replaced HR8, which was used last year, as the latter had shown a very poor performance. These varieties were compared with Mereke and Mbagboli, two local varieties. The results are summarised below:—

MAKITA SITE

Variety	Yield paddy per acre in lb.				
Radin China 4	..	..	..	..	1470
Pia Gazo	..	..	..	..	1170
Mereke	..	..	..	..	1135
Anak Didek	..	..	..	..	995
Seri Raja	..	..	..	..	915
Mbagboli	..	..	..	..	735

MAYEKE SITE

Variety	Yield paddy per acre in lb.					
						1958 1959
Radin China 4	..	..	..	..	..	2,222 2,305
Seri Raja	..	..	..	..	..	2,744 16,50
Mereke	..	..	..	..	..	1,829 2,630
Mbagboli	..	..	..	..	..	2,197 2,005
Pia Gazo	..	..	..	..	..	1,727 1,200
Anak Didek	..	..	..	..	..	— 2,350
HR. 8	..	..	..	..	..	775 —

(b) Fertiliser trials were laid down at Torma II and Makita sites. The trial at Torma II testing the response of superphosphate and sulphate of ammonia was a complete failure, as it was sown too late, and the rice was

destroyed by fish. That at Makita site with superphosphate at three levels, 1-cwt, 2-cwt, 3-cwt, showed that there is a definite response to phosphate on the shallow flooding sites, although there was no significant differences in the response to the three levels used. The results are summarised below:—

<i>Treatment</i>	<i>Yield paddy per acre in lb.</i>				
Control	..	..	..	..	624
1 cwt. superphosphate	..	..	..	..	1346
2 " "	..	..	..	..	1211
3 " "	..	..	..	..	1443

This well illustrates that phosphate is required on such areas if good yields are to be obtained; also effective weeding is necessary.

(c) Observation plots of 16 promising varieties from Rokupr were laid down on Makita site. Two of these, Bong Sen Den 2R10 and Parn A—191, which have shown the most promise will be incorporated in next year's variety trials.

177 *Mechanical Cultivation*.—The amount of rice marketed from the 1958/59 crop was about one-third less than the quantity sold in 1958. This was due to the reduced acreage ploughed. The 1959/60 crop was excellent and the Co-operative Societies marketed a record quantity of 67,779 bushels of husk rice.

178. Three thousand seven-hundred and eighty-eight acres were allocated to farmers, a reduction on the 1958 figures due partly to the new policy of "full payment in advance" of ploughing fees and also to the fact that heavy rains in January and February delayed the start of ploughing until late February.

179. The acreage worked since the inception of the scheme is shown in the table below:—

<i>Year</i>	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959
Acreage ..	4	70	250	466	1,165	2,044	4,059	5,530	5,302	4,115	3,788

Requests for seed harrowing increased and a total of 2,301 acres were harrowed for farmers who paid 10s. per acre in cash for this service.

180. A further decrease was recorded in the acreage cultivated by Co-operative Societies at Bum and Yawbeko chiefdoms. The number of acres cultivated was 601. This brought the total area allocated to farmers in the district to 4,389 acres.

181. The tractor force in the area consisted of 19 Fowlers, 1 Track. Marshall, 5 old-type Fordson County Crawlers and 1 Ferguson 35 D. The Fowlers replacing the lighter Fordson Counties in the Gbap area are less efficient, as they tended to "bog down" more frequently in the wet conditions.

182. Apart from a few farmers who planted late and hence suffered from early flooding, a good crop resulted on all the low sites and is reflected in the record sales of rice. On the higher areas, however, the rice made poorer growth and weeds were a problem.

183. *Piassava Experiments*.—(a) The rotational cutting experiment which was started in 1952 entered its eighth year. The treatments given to

the plots each of which is approximately 0.26 acres in extent are shown below:—

	<i>Treatment</i>
Plot 1	Cut every year
Plot 2	„ „ 2nd year
Plot 3	„ „ 3rd year
Plot 4	„ „ 4th year.

Indications to date are that cutting every 2nd year gives the highest yield of Prime Sherbro quality piassava, while cutting every 4th year results in many fibres being brittle and more frequent cutting, though producing a large bulk of material and hence a large bulk of uncleaned fibre, is resulting in many weak fibres.

(b) A trial involving the following boiling and retting treatments in combination with each other was started and samples sent to the Tropical Products Institute for testing.

The treatments were:—

Boiling

12, 24, 36, 48 hours and no boiling

Retting

7, 14, 21, 28 days and no retting.

184. *District Council*.—Work was limited to maintenance of nurseries and the running of the established District Council projects. 2,500 sprouted oil palm seeds were supplied from Njala to the nursery at Gambia. These should be ready for supply to farmers in 1961.

NORTHERN CIRCLE (BOMBALI-TONKOLILI)

185. *General*.—There was a shift in emphasis from mechanical cultivation to general crop and livestock extension work in this Circle. Advice to both District Councils was maintained and the co-ordination between the District Council and departmental extension work improved.

186. *Ox ploughing*.—The number of ploughs in the Mabole Valley area has shown a decline in recent years. An ox-ploughing demonstration team was therefore formed to encourage ox-ploughing throughout the cattle area, and also as a nucleus for training of plough oxen for interested farmers.

187. *Mechanical Cultivation*.—Consolidation of the scheme and investigation into yield improvement of boliland rice crops continued. With the inception of the “full payment in advance” policy a sharp drop in acreage occurred. No new sites were opened, and sustained efforts to collect bad debts, even to the extent of instituting Court proceedings failed to produce any overall response.

188. The acreage worked from the inception of the scheme is shown in the table below:—

<i>District</i>	1952	1953	1954	1955	1956	1957	1958	1959
Bombali ..	238	607	1,600	1,373	192	640.5	940	224.5
Tonkolili ..	—	308	849	2,227.75	2,627.5	1,984.5	574	190.5
	238	915	2,449	3,600.75	2,819.5	2,625	1,514	415

189. The Malanema Kuru Rice Producers Society at Massimo continued operations, again on a reduced scale, 346 acres being allocated bringing the overall figures for the two districts to 761 acres.

190. *Oil Palm and Coffee*.—Farmers continued to show interest in the growth of these crops and distribution of seedlings from both District Council nurseries continued. A total of 8,120 oil palm and 34,205 coffee seedlings were distributed in the two districts.

191. *Rice Investigations*.—*Kontobe*—Rice experimental work at Kontobe was continued, and a number of trials and experiments drawn up by the Agricultural Chemist, and the Chemist, West African Rice Research Station, Rokupr, were laid down.

1/59 Latin Square.—Time of Cultivation—This was a repeat of experiment 4/58. The treatments were (a) early dry season ploughing; (b) mid dry season ploughing; (c) late dry season ploughing. Results so far have indicated no particular advantage in ploughing at any specific time. Differences in yields were easily observed to be due to a gradation in water depth across the experimental area. Weed growth associated with water depth was found to be the factor controlling yield.

2/59 Continuous Cropping Observation Plots.—This is a continuation of a 3-plot observation started in 1957. The plots were treated as follows:—

(1) Cultivated and cropped with no fertiliser.

(2) Cultivated and cropped with 2 cwt. superphosphate per acre.

A third plot was retained in its original uncultivated state so that a comparison of the botanical weed composition can always be made.

The plot receiving no fertiliser gave no yield. Results show that a dressing of 2 cwt. of superphosphate per acre has given an annual increase of about 200 lb. husk rice per acre during the past 2 years.

3/59 Early Variety Trials.—West African Rice Research Station plots.

4/59 Late Variety Trials.—West African Rice Research Station plots.

5/59 Fertiliser Trials.—This trial was designed to determine the effect of dolomitic limestone with and without superphosphate. Observations indicate that dolomitic limestone with superphosphate might be worth further investigation. It was not possible, owing to a fault in the design and an error in the layout of this trial, to do a statistical analysis of the results.

6/59 and 7/59 Fertiliser Trials.—*West African Rice Research Station*—These trials were laid down to investigate the effect of organic matter, lime, phosphate, and iron rich soil on boli rice. Results so far have indicated possible toxic concentrations of aluminium.

NORTH-EASTERN CIRCLE (KONADUGU)

192. *Cattle Owner Settlement Scheme*.—This has been a year of consolidation for the scheme and an extension of tractor ploughing in the swamps to foster swamp cultivation in the area. The scheme enjoys a reasonable degree of popularity with cattle owners and farmres in the area. A general reduction of rent from £9—£6 per annum for each settlement was made, and this, coupled with a modification in the method of rent collection, improved the cattle owners response to the scheme at a time when the pull to migrate to other areas was very strong.

193. There were no new settlements registered, and the table below gives an indication of the growth of the scheme:—

Settlements		YEARS						
		1953	1954	1955	1956	1957	1958	1959
No. Registered	..	17	36	37	44	63	110	110
No. Occupied	..	14	14	33	29	57	86	89

194. The Cattle Owners Co-operative for Marketing started last year has not so far proved very successful. The lack of reasonable cattle marketing facilities is hampering progress on the scheme as it makes it difficult to enforce a maximum stocking rate. Improvement of grazing has been limited to the clearing, harrowing and seeding of 16 acres with pueraria and the scattering of acid treated seed on a further 63 acres of denuded land (mainly old warri and farm sites).

195. Wild animals continued to give much concern, and attacks by leopards reached serious proportions in some areas. 7 "bounty" payments were made for leopards shot. Neither shooting nor the erection of traps has proved satisfactory during the dry season, as cattle scatter far in search of grass and become easy victims. Maintenance of tractor roads in the settlement areas continued, and a start was made in replacing temporary bridges with more permanent structures.

196. A welcome increase in interest in the use of aids to tick control and the erection of semi-permanent cattle crushes has been noted. 12 Fula cattle owners have now purchased their own sprayers direct from the United Kingdom.

197. *Mechanical Cultivation*.—Interest in this work was maintained as shown by the increase in the acreage worked. Approximately half of this year's increase is in the Kabala Musaia area the remainder in the Mongo and Sulima chiefdoms.

<i>Cultivation</i>	1957	1958	1959
Ploughing	140	215	319
Harrowing	48	81	104

Demand greatly exceeded the acreage worked. Perhaps the most encouraging aspect of this work is that full payment for work done was made in advance. Apart from mechanical cultivation work, tractors were used for contract haulage both for District Council and for private individuals during the year.

198. *District Council*.—District Council work was limited to the settlement scheme and to the running of the Native Administration nurseries.

COLONY CIRCLE (NEWTON)

199. *Rice Swamp Development*.—Rainfall, as last year, was again erratic; a dry spell coming at the time of transplanting resulted in a poor early crop. The main crop however benefited from high rainfall later and yields were generally satisfactory. A further drop in acreage rented to farmers and mechanically cultivated was recorded at Maswari polder. Rented acreage dropped from 87½ acres to 69½ acres, and the area mechanically cultivated from 26 acres to 15½ acres at Maswari and only 5½ acres were ploughed at Fogbo. Interest continued to be shown in the Wellington polder and all but 4 acres of the 59 acres were planted. High tides however threatened the crop as the communal effort repairs to bunds remained incomplete.

200. *Oil Palm and Coffee Distribution*.—A slight drop in the number of oil palm seedlings distributed was recorded. A total of 1,250 seedlings were supplied. Requests for wire collars continued to be received, demonstrating the appreciation of the value of those already supplied. Only 800 coffee seedlings were sold.

201. *Local Stock keeping*.—Further continued overall expansion was recorded in the local pig keeping industry, and farmers are getting more conscious of the need to rear exotic stock in place of native, and also as to

the benefits to be derived from feeding a much improved ration. No serious outbreaks of disease occurred, and conditions of housing improved, with most farmers laying down concrete floors in their pig pens. Demand for weaners was the highest on record, and it was not possible to meet all outstanding orders.

202. Interest in poultry keeping continued, and the number of farmers and size of flocks increased. There are at least eight large scale producers, two with flocks over 2,000, three with flocks over 500 and the others ranging from 100–500. Again it was not possible to meet the demand for chicks even though the incubator capacity was doubled. A total of about 5,391 chicks and 1,400 adult birds were sold.

203 *Waterloo Oil Palm Plantation*.—A small extension of 37 acres was made bringing the total planted acreage of oil palms to 1,050 acres, and completing the plantation.

204. A Fowler tracklayer with Braydozer attachment was introduced to assist in stumping. A total of 262 acres has now been cleared, 206 of which can now be maintained mechanically. Records continued to be kept of weight of fruit bunches harvested. This year an increase to 130,015 lb. was recorded as against 54,218 lb in 1958. 600 acres are now bearing including the 1956 area which started bearing this year.

205. Routine application of sulphate of ammonia and magnesium sulphate was continued. Intercropping by local farmers was not allowed after the middle of the year, and all crops were cleared off the land by the end of the year.

F—RESEARCH

Plant Pathology Section:

206. Apart from a visit to the West African Cocoa Research Institute at Tafo in Ghana from 25th November to 1st December, the Plant Pathologist was on duty in the country throughout the year.

207. *Collections*.—Work on Black Pod spraying trials and transmission of cocoa viruses limited the collection of phanerogamic and mycological specimens for the Njala herbarium. The Plant Pathologist continued to supervise the herbarium and advised on problems of plant identification in the absence of a Systematic Botanist and Ecologist.

208. *Virus Diseases of Cocoa*.—Following work on the transmission of the “Gandorhun” virus on cocoa seedlings, attempts were made to transmit the “Gichun” virus by grafting on to cocoa seedlings at Njala. 20 per cent of the seedlings grafted showed virus symptoms. Yellowish pin-points, spots and chlorotic blotches appeared on the young leaves, but these symptoms were replaced by a slight wrinkling on some of the hardened leaves. Distinct and extensive mosaic patterns were observed throughout the year on the flush leaves of one seedling on which material of the Gandorhun virus had been patch-grafted.

209. *Black Pod Disease of Cocoa*.—*Phytophthora palmivora* (Butler)—Spraying to control Black Pod disease on cocoa in Gaura Chieftdom was carried out for the first time by farmers through their Co-operative Societies. The performance of the spraying team was of a high standard, and farmers expressed satisfaction with the work.

210. There was a slight alteration of the layout and a modification of the treatments of the departmental spraying at Kpuabu (Gaura) to test the effect of lengthening the interval between spray applications, the efficiency

of spraying machines and to compare three proprietary fungicides with Carbide Bordeaux. In addition the experimental site was extended by the inclusion of a small farm in which Black Pod was severe. The treatments were:—

- (i) Underbrushing and 1.0 per cent Carbide Bordeaux applied to developing pods at 3, 5, 6, 7 and 8-weekly intervals;
- (ii) Underbrushing and applying 1.0 per cent Carbide Bordeaux at 3-weekly intervals with (a) Motoblo (Power sprayer), (b) Leo colibri, (c) Fouroaks and (d) Mysto No. 155 Machines; (b) and (d) are pneumatic knapsack sprayers;
- (iii) Underbrushing and 0.4 per cent "Perepod" applied once every six weeks;
- (iv) Underbrushing and 0.4 per cent "Perenox" applied once every six weeks;
- (v) Underbrushing and 0.4 per cent "Kopapod" applied once every six weeks;
- (vi) Underbrushing and 1.0 per cent Carbide Bordeaux applied once every six weeks;
- (vii) Control (untreated);

211. The results show that spraying generally protected pods from infection, though the level of incidence was higher on trees in the new farm acquired at the beginning of the season, which were sprayed for the first time. Spraying once every seven or eight weeks did not result in a marked reduction in infection compared with the control. The Mysto No. 155 appears the most suitable machine to use under present conditions.

212. At Malema in Njaluahun Chieftdom, "Cushion Gall" of cocoa was reported. The symptoms, as observed, were profuse flowering from almost all the cushions of the tree, without any setting of pods. The affected tree was very large with a trunk diameter of one foot at soil level, and height of 25-30 feet. The tree affected appeared otherwise healthy and the surrounding trees were in bearing.

213. *Other Diseases.*—No new diseases were reported during the year.

214. *Diseases of Seedlings.*—*Forest Trees*—Death of seedlings of *Nauclea diderichii* was reported in the Forestry Department's nursery at Bo. The disease attacked seedlings at a point in the stem just above soil level and extended through the stem and petioles to the leaves. Affected seedlings collapsed in groups, leaving bare patches on the nursery beds. Hyphal strands without spores were observed on dead seedlings and young sporangia of a species of *Pythium* were later produced by the sterile hyphae in water culture.

215. *Banana Disease.*—"Leaf Spot" disease, *Mycosphaerella musicola* (Leach) was observed on bananas at the Rice Research Station at Rokupr.

The disease appeared to be severe on the oldest leaves of the largest plants. At Makeni the only other area where the disease was reported, plants with leaf spots gave high yields. It is felt therefore that the disease is not particularly serious in this country at present.

SYSTEMATIC BOTANY SECTION

216. There was no Botanist in post during the year and the section continued to be supervised by the Plant Pathologist. Later in the year information was received that a Systematic Botanist Ecologist had been recruited and would arrive in the country early in 1960.

ENTOMOLOGY SECTION

217. An Entomologist arrived in the country on the 3rd of September to fill the post left vacant by the departure of Mr. F. A. Squire in 1952. He was posted to Njala.

218. *Pests*.—Trials were initiated on the control of pests on two major crops, cocoa and coffee.

219. *Cocoa*.—A trial using three insecticides (Gammalin 20, Aldrin 40 per cent and Endrin 20 per cent emulsifiable concentrate) was set up for the control of capsids, *Sahlbergella singularis*, Hagh on cocoa. Each insecticide to be applied at one, two and three-monthly intervals, to give information as to the most efficient application interval. The trial is designed to show also the most economical insecticide.

220. *Coffee*.—Investigation was started on the control of "shot hole borer", *Xyleborus* spp. which attacks the primary branches of coffee, rapidly killing them. A trial was laid down using two concentrations of Dieldrin 20 per cent emulsifiable concentrate. A double application, with a month interval between each spraying was given. The results so far have been encouraging. In the 5 per cent Dieldrin plot there was only 37.4 per cent of the damage which could be found in the control, and in the 1 per cent Dieldrin plot there was only 27.2 per cent damage.

221. *Visits*.—Dr. C. P. Hoyt, an Entomologist of the South Pacific Commission visited Sierra Leone. Dr. Hoyt has been engaged on investigations for the biological control of *Oryctes* on coconuts; whilst in the country he found four predators:

- (1) A mite predator on *Oryctes* eggs.
- (2) A large elaterid larva,
- (3) A carabid beetle,
- (4) A large scaritid beetle.

The last three all attack the larvae of *Oryctes* spp.

222. *Collection*.—A start with the rearrangement and sorting out of the departmental insect collection was made. All specimens were washed with a 3 per cent solution of mercuric chloride and alcohol to remove fungus developing on them.

AGRICULTURAL CHEMISTRY SECTION

223. The Agricultural Chemist transferred to the Seychelles and did not resume duty in this country after leave. This post therefore, as well as that of the second Chemist for which a Sierra Leonean had recently qualified but did not take up appointment, remained vacant.

A number of experiments and trials laid down by the Chemist, before he proceeded on leave, are described under the section dealing with the Northern Circle.

SOIL SURVEY SECTION

224. Work on the soil survey of the bolilands was continued after the arrival of the Soil Surveyor on secondment from the Pool of Colonial Soil Surveyors. He remained in the country throughout the year.

225. Field work commenced in the north around Batkanu and moved progressively southwards towards Massimo, the flood plain being examined in the dry season and the upland soils in the wet season. By the end of the year field mapping on the air photographs was 75 per cent complete and the soils had been examined in detail as far south as the Makeni-Lunsar road, and in some areas to the south of this.

226. A number of individual "bolis", (relatively flat, treeless, annually flooded grasslands), were selected for detailed examination with soil pits spaced out on a 5-chain grid and separate maps were prepared for these showing the soil pattern in series, subseries and phases. Of the bolis selected Batkanu, Roehen and Bantoro had been completed by the end of the year. A contour map of the Bantoro boli was prepared with contours at 1 foot intervals. Work was started on the Madina-Tabai and Romankne and Kontobe bolis.

G—NJALA TRAINING COLLEGE

227. *Agricultural Courses*—Junior staff of the Instructor grade for the Department of Agriculture continued to be trained at Njala Training College. During their three years at the College the students receive lectures on a wide variety of agricultural subjects and in addition have lectures in English and mathematics from the Education Officers at the College. The College course is preceded by a period of one year's attachment to an agricultural circle.

228. Seventeen students were selected and posted to departmental station farms to begin a year's practical farm work. There were fifteen students in the second year course including three from the Gambia and one for the West African Institute for Oil Palm Research. Unfortunately four students did not come up to the required academic standard and their scholarships were withdrawn. The senior third year class started the year with fourteen students including two for the West African Institute for Oil Palm Research and one Gambian, but as in the second year class, three had their scholarships withdrawn.

229. During the year increasing importance has been placed on the value of the students meeting farmers on their own farms. Several farm walks and one long trek to the south-eastern area of the country were arranged during the year. At first, many of the students found difficulty in putting their newly obtained theoretical knowledge over to the farmers. However after several farm walks some of the students became very proficient in this, and the value of this type of training was fully shown.

230. On the College farm the nursery was extended and a wide variety of vegetable crops is being produced. A propagating box was made, and at the second attempt the students successfully propagated cocoa seedlings from cuttings. A small statistical experiment to show the effect of fungicidal seed dressing on the germination of Kono variety groundnut seed was carried out. The students sowed the seed, prepared all records and worked out the experimental error.

231. The livestock section is still confined to poultry and rabbits, but it is hoped that in the near future full use will again be made of the excellent piggyery that is available on the farm.

232. On the whole it has been a good year for the agricultural students at the College. The majority worked hard in class, and in addition took a full part in all other College activities.

APPENDIX 1—EXPORTS OF PRINCIPAL AGRICULTURAL PRODUCTS

	1938			1956			1957			1958			1959		
	Ton	Value £	Export Value per ton £	Ton	Value £	Export Value per ton £	Ton	Value £	Export Value per ton £	Ton	Value £	Export Value per ton £	Ton	Value £	Export Value per ton £
Bananas ..	1	2	—	16	333	21	17	407	24	19	431	22½	18	424	23
Beeswax ..	—	—	—	11	6,074	528	2½	1,236	494	5	2,153	430	29	11,536	390
Benniseed ..	374	3,700	10	12	761	63	—	20	—	—	—	—	—	—	—
Calabar Beans ..	—	—	—	125	31,797	254	90	22,095	246	58	10,418	180	58	7,466	129
Cocoa ..	384	5,849	15	2,881	581,305	201	2,011	385,946	192	2,828	872,290	309	2,617	701,585	268
Coconuts (fresh) ..	N.a.	44	—	24	1,013	42	19	392	21	11½	298	26	8	286	36
Coffee ..	38	793	21	3,009	660,875	219	3,758	895,687	238	3,348	895,055	267	4,931	984,858	199
Ginger ..	2,705	60,680	22	1,117	241,269	216	700	99,880	143	789	70,050	89	1,054	102,668	97
Groundnuts ..	N.a.	5	—	—	2	—	—	2	—	—	—	—	—	—	—
Kola nuts ..	1,450	29,785	20	828	106,840	129	1,736	102,942	140	1,035	135,227	131	742	111,633	150
Palm Kernels ..	63,697	457,031	7	57,645	2,507,839	43	52,967	2,253,357	43	54,609	2,448,256	47	57,530	3,175,621	55
Palm Oil ..	1,006	16,025	15	13	1,464	113	11	1,233	112	10	1,077	108	9	1,145	127
Pepper (Dried Red) ..	90	3,410	38	2	324	160	1½	217	160	¾	275	366	1	308	308
Piassava (Prime Sherbro) ..	—	—	—	611	47,284	77	708	47,954	68	789	43,176	55	586	34,062	58
Piassava (Sulima) ..	3,751	40,369	10	4,633	262,111	56	3,641	199,982	55	4,155	194,303	47	4,838	203,271	42
Total Value all main Agricultural Exports ..	—	617,693	—	—	4,449,341	—	—	4,011,335	—	—	4,673,009	—	—	5,334,861	—
Total Tonnage all main Agricultural exports ..	73,556	—	—	70,927	—	—	64,662	—	—	67,657	—	—	72,421	—	—

APPENDIX II—RAINFALL, 1959

Station	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Average 10 years
Musaia	0.00	0.00	0.65	1.45	11.04	8.15	11.42	9.55	13.18	12.89	6.22	Nil	74.55	78.63(8)
Makeni	1.39	0.00	1.19	0.81	14.07	18.12	14.79	20.62	26.63	23.82	13.32	0.03	134.79	123.4
Kontobe	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	N.a.	—	—
Katonga	1.95	1.22	2.24	0.00	8.32	18.12	23.81	25.79	18.13	9.79	6.49	0.01	115.87	—
Batanku	0.56	0.04	1.13	1.57	8.45	14.71	19.99	28.86	21.85	10.66	7.66	0.00	115.48	—
Rokupr	1.77	0.00	2.06	0.01	10.81	15.65	24.4	28.57	23.84	11.03	6.72	0.00	124.86	119.6
Lungi	0.50	0.04	0.70	Trace	11.26	17.49	31.11	33.41	19.28	6.95	10.37	Trace	133.33	132.4
Newton	0.51	0.47	0.24	0.43	9.45	19.48	27.59	30.61	16.22	7.12	6.92	0.99	120.25	123.8(7)
Waterloo	0.59	0.62	0.11	0.32	9.28	23.29	34.19	30.23	N.a.	6.88	5.89	0.40	128.94	—
Hill Station	4.24	0.34	1.11	0.25	22.33	23.83	67.18	49.53	30.53	6.93	7.18	0.23	203.68	193.7
Lumley	N.a.	0.17	1.08	0.13	7.65	N.a.	N.a.	25.92	25.06	5.89	6.64	0.00	156.15	—
Njala	2.11	1.78	3.45	4.24	14.05	14.01	19.45	12.36	24.22	10.55	3.01	0.29	109.52	114.8(7)
Bo	1.99	.74	1.75	1.42	15.5	10.68	12.53	19.34	19.14	19.40	8.52	0.90	111.91	118.6
Bonthe	1.96	4.60	1.54	3.63	10.53	21.22	36.40	14.63	22.57	5.50	9.10	0.02	131.70	142.9
Solon	1.29	6.27	0.55	4.01	8.90	24.44	50.33	6.65	27.47	8.86	22.83	Nil	161.60	—
Torma	2.48	1.42	1.91	3.76	9.36	16.05	30.15	16.95	21.97	7.05	8.18	1.25	120.53	—
Kenema Farm	0.43	0.21	3.14	5.49	13.43	15.76	12.37	10.37	24.60	11.15	8.28	0.33	105.56	—
Kailahun	N.a.	0.03	3.92	N.a.	12.64	17.08	N.a.	13.72	24.46	8.65	11.98	N.a.	—	—
Yengema	0.67	Trace	1.27	4.15	10.66	17.41	16.43	14.89	21.89	9.56	7.72	.91	105.52	—

APPENDIX III

RESULTS OF TRIALS AND EXPERIMENTS, NJALA

I. *Groundnuts*.—(a) *Variety Trials*.—A Nigerian variety Mwitunde was compared with five local varieties in both 1958 and 1959 and the results are summarised in the Table below. Sowing was done six inches between the plants on ridges nine inches apart. Mwitunde out-yielded all the other

Variety	lb. seed sown	Average	Yield un lb. /acre 1959	Yield in lb. /acre 1958
Mwitunde ..	9	.044	1543	926
Wilbakana ..	11	.057	1015	136
Mares ..	18½	.095	609	468
Lakansi a ..	4½	.029	681	22
Sotina ..	26½	.124	1,048	572
Kono ..	17	.067	537	489

(b) *Exhaustion Trial*.—A crop of groundnuts has been taken on Block 15, of one acre since 1951. The yield declined from 974 lb. undecorticated nuts in 1951 to 140 lb. in 1956. In 1957 two-quarter-acre plots were fertilised with Dolomitic limestone at 20 cwts. per acre, superphosphate at 2 cwts per acre and potassium sulphate at 2 cwts per acre. The fertilised plots yielded 1,700 lb undecorticated nuts per acre and the two unfertilised plots at 363 lb. undecorticated nuts per acre. The four plots are now treated as follows:—

Plot 1—Fertilised 1957 and every two years thereafter.

Plot 2—Fertilised 1957 and every three years thereafter.

Plot 3—Never fertilised.

Plot 4—Fertilised 1958 and every year thereafter.

Results for 1958 and 1959 are shown below.

Plot No.	Yield in lb.	acre undecorticated nuts	Yield of tops in lb. acre		
		1958	1959	1958	1959
1 ..	..	(1,224	1,860	(1,752	4,808
2 ..	..	(	832	(	1,932
3 ..	..	112	308	408	688
4 ..	..	300	2,024	1,196	4,048

II. *Yams*.—The results of the variety trials are as follows in lb/acre:—

Years	1954	1955	1956	1957	1958	1959
Yellow Yams ..	2,259	10,224	7,267	12,442	18,423	6,073
White Yams ..	1,452	971	2,827	1,803	1,841	1,087
Water Yams ..	Not Grown	—	7,350	11,613	21,100	1,940
Chinese Yams ...	Not Grown	—	—	9,880	2,360	12,300

III. *Permanent Crops*.—*Coffee*.—The yield records for *Robusta* coffee at Njala are shown below. Each block is of 1 acre containing 529 trees at a spacing of 9 ft. by 9 ft. Block 17 was planted in 1934 pruned to three stems per plant in 1949 and dug out and replanted in 1958. Block 25 was also planted in 1934 pruned to three stems per plant in 1949, stumped back to 1 foot in 1954 and thereafter maintained under the multiple stem system of pruning. Block 12 was planted in 1955. Block 33 was planted in 1954 and is the only Block without shade trees. The *Stenophylla* coffee was planted in 1934, 0.43 acres only and was cut back to 1 foot in 1957. The

Excelsa coffee was also planted in 1934, 0.52 acres only, and was cut back to 1 foot in 1959. All yields are shown as lb. fresh coffee cherries per acre; the equivalent coffee bean weights dried and hulled are approximately 25 per cent of these figures.

Yield in lb. per acre fresh cherries.

Year		Block 12	Block 17	Block 24	Block 33	<i>Stenophylla</i>	<i>Excelsa</i>
1940	..	..	89	78			
1941	..	..	126	94			
1942	..	..	337	130			
1943	..	..	758	338			
1944	..	..	357	249			
1945	..	..	515	526			
1946	..	..	502	606			
1947	..	..	1,067	894			
1948	..	..	1,141	1,050			
1949	..	..	503	120			
1950	..	..	436	1,725		24	1,182
1951	..	..	583	1,499		61	2,068
1952	..	..	592	1,495		178	1,145
1953	..	..	152	1,859		Nil	N.R.
1954	..	..	153	43	Planted no shade	63	1,874
1955	..	.. Planted	1,138	331	21	327	N.R.
1956	..	.. —	1,319	568	—	228	993
1957	..	.. —	1,098	224	69	Nil	2,975
1958	..	..	347 Replanted	715	166	Nil	1,470
1959	..	..	3,425	—	2,334	1,772	Nil

The excellent yields of Blocks 12 and 25 in the 1959/60 harvest season are worth noting. In the following diagrams it is clearly shown however that nevertheless a considerable proportion of the trees are very poor yielders. The need for selection and further investigation is appreciated and seed of high yielding trees was sent to Kpuabu so that this can be done.

APPENDIX IV.—RESULTS OF BLACK POD EXPERIMENTAL SPRAYING ON A PRIVATE FARM AT KPUABU FOR THE SEASON MAY TO OCTOBER, 1959

	TRIAL I		TRIAL II		TRIAL III													
	FREQUENCY OF APPLICATION		EFFICIENCY OF SPRAYING MACHINES		CARBIDE BORDEAUX COMPARED WITH PROPRIETARY FUNGICIDES													
	Pods were sprayed with 1.0% Carbide Bordeaux at intervals of 3, 5, 6, 7 & 8 weeks		Pods were sprayed with 1.0% Carbide Bordeaux using: (a) Motoblo (power), (b) Leo Colibri, (c) Four Oaks (d) Mysto No. 155 at 3-weekly intervals.		0.4% Perepod, 0.4% Kopapod and 0.4% Perenox were compared with 1.0% Carbide Bordeaux applied at 6-weekly intervals.													
	Control	3	5	6	7	8 weeks.	Control	Untreated	Motoblo	Leo Colibri	Four Oaks	Mysto	Control	Untreated	Carbide Bordeaux	Perepod	Kopapod	Perenox
(i) Black pods (%) ..	6.55	0.15	1.93	0.54	3.88	3.87	11.11	2.09	0.1	0.13	0.5	14.05	4.49	15.21	2.09	0.17		
(ii) Ripe pods (%) ..	93.45	99.85	98.07	99.46	96.12	96.13	88.89	97.91	99.9	99.87	99.5	85.95	95.51	84.79	97.91	99.83		
(iii) Total pods	824	1,318	1,141	739	952	1,213	684	1,102	1,010	768	803	434	847	631	477	594		
Ripe pods ..																		

N.B.—(a) Black and Ripe pods (i) and (ii) are expressed separately as percentages of total pods (iii);

(b) Each plot contained 8 trees producing a minimum of 12 pods per tree;

(c) There were 5 replications of each treatment except Trial III which has 4 replications; thus 240 trees in Trial I, 200 trees in Trial II, 160 trees in Trial III;

(d) Trial III; in the Carbide Bordeaux and Perepod plots several trees with very high incidence of Black Pod were sprayed for the first time.

APPENDIX V

NOTES ON COLONIAL DEVELOPMENT AND WELFARE SCHEMES

(i) *Boliland Soil Survey.—D. 3094*—In 1953 a grant was made under Colonial Development and Welfare Scheme D.2070 for survey and trials on the bolilands in Bombali and Tonkolili districts which it was hoped would prove suitable for mechanical cultivation. Much information was gained from practical and experimental trials and large areas about 3,000 acres were ploughed annually for farmers. When the scheme was completed in December, 1956, it was felt that a full soil survey of the area should be done, also that the weed, yield and dust problems had to be resolved before embarking on large scale mechanical utilization of these lands. Approval was sought and obtained for a grant under Scheme D.3094 for a soil survey. A Government financed programme of field experiments was also started at the Kontobe boli.

2. Work started on the boliland soil survey in 1957, but the untimely death of the Soil Surveyor caused delay in completion, until a new Soil Surveyor was seconded from the Pool of Colonial Soil Surveyors to replace him. Field work has now been continued and these investigations should be completed by mid 1960.

(ii) *Cattle Owner Settlement—D. 3032*.—In 1953 the Koinadugu District Council financed a scheme for establishing Fula families, with their livestock, on holdings of approximately one square mile. A number of small dams and bunds were constructed to provide better water supplies on the holdings. The scheme promised well and by 1956, 35 areas had been established.

2. In 1956 £16,600 was obtained under Colonial Development and Welfare Scheme D.3032, to consolidate and improve the existing 35 areas, bringing them up to a higher standard than was possible with the limited resources of the District Council and to extend with further holdings. The scheme was also redesigned to effect not only the settlement of the nomadic cattle owners, thus controlling serious overgrazing of the grasslands, but also to improve the relationship between the cattle owners and the local land owning tribes and farmers. By 1959 110 holdings had been demarcated with 81 occupied.

(iii) *Animal Husbandry Station.—D. 3062*—Over the years 1947–55 an Animal Husbandry Station has been established at Musaia with the help of two Colonial Development and Welfare Schemes D.794 and later D.1633. Scheme D.1633 was finally wound up at the end of 1955 and all recurrent costs integrated with the normal departmental votes.

2. The objective of the station was and still is to evolve a quicker maturing and heavier type of beef animal from the indigenous Ndama Stock by selection and breeding, and to investigate the development of improved pasturage.

3. In 1957 a further Colonial Development and Welfare Scheme D.3062 was approved in order to complete the capital items which remained necessary. By 1959 progress under this scheme had been satisfactory, except that the fencing programme required had been found to be far more extensive than was anticipated, both to facilitate the rotational use of pastures to control internal parasites, and to protect the breeding programme.

(iv) *Water Development, Scarcies.*—D. 3166—Earlier work carried out in the Scarcies area in the 1940's showed that very large areas of land, which were not being cultivated because of unfavourable water conditions, could be reclaimed. This reclamation could best be achieved by the construction of channels to allow free flow of tidal water.

2. In 1957 an allocation under Colonial Development and Welfare Scheme D. 3166 was made to reclaim in this way, for rice production, some 5,000 acres in the Scarcies area. By the end of 1959, progress had been satisfactory, the staff required had been recruited, excavators and ancillary equipment purchased and a total of 1,000 acres at Funkedeh and about 600 acres at Yakban had been reclaimed. Preliminary water gauging was also started in 1959 in the Maseba Creek and in the Little Scarcies adjacent to the Rhombe Swamp. The Rhombe swamp, if survey shows that it can be developed will make available over 20,000 acres of swampland for rice cultivation and is now the subject of a separate Colonial Development and Welfare application for funds to enable this to be carried out.

(v) *Coffee and Cocoa Experimental Work.*—D. 3055—A grant was made under Colonial Development and Welfare Scheme D. 3055 in 1957 to establish a station for experimental work on cocoa and coffee in Kenema District. During 1958/59 the station was established and all buildings for cocoa work and staff housing completed. A number of Amazonian cocoa seed introductions from the West African Cocoa Research Institute were made and trials and experiments with these and high yielding selections of Amelonado cocoa have been begun.

(vi) *Rice Research Station.*—R. 1090—Apart from contributions from Sierra Leone and the other West African Governments, the Rice Research Station at Rokupr was established and has been financed from four Colonial Development and Welfare grants, R. 300, D. 1340, R. 300 A and D. 134 A.

2. The station had been started in 1934 by the Sierra Leone Department of Agriculture for experimental work on rice in tidal mangrove areas on which the main development of swamp rice growing was being carried out. Work was then largely concerned with the determination of the best cultural practices and the improvement of yields by introduction and selection of rice varieties.

3. In 1947 it became apparent that rice growing was rapidly increasing in the other West African territories and proposals were put forward to develop and enlarge the station to serve the research needs of all four countries. Funds, the first of the Colonial Development and Welfare grants mentioned above, became available in 1951.

4. For a number of years, because of the staff position it was not possible to do much more than continue and consolidate existing lines of research. In 1959, the full complement of research officers was at last in post, and the complete programme including work on inland swamps and riverain grasslands was embarked upon.

5. The Rice Research Station has for the last seven years submitted its own annual report separately.

(vii) *Systematic Botanist and Ecologist.*—R 811—A grant was made in 1957 under Colonial Development and Welfare Research Scheme No. R. 811 for the employment of a Botanist Ecologist to undertake a study of forests and other vegetation in Sierra Leone.

2. The scheme has had to remain in abeyance as it has so far proved impossible to recruit a suitable man to the post. The only expenditure from the grant so far has been on periodicals.

3. Late in 1959 a suitable officer was recruited and approval requested that the scheme be continued to the end of the new Colonial Development and Welfare period in 1961/62.

APPENDIX VI

SIERRA LEONE WEIGHTS AND MEASURES

The sale of local produce in native markets is almost invariably done by volume. Standard containers which can be readily obtained are used, the commonest being the cigarette tin (cup) and the beer bottle. Larger measures are the four-gallon kerosene tin, and the kerosene case, which held two tins. These are no longer readily available since fuel is now principally supplied in 44-gallon drums or in bulk.

Certain measures became standardised by usage for the major agricultural commodities. The average weight of a kerosene case, heaped up until no more stayed on, was taken as the basis for the "bushel" weight. The Sierra Leone "bushel" is, therefore, considerably greater than the Imperial bushel. It does not even refer strictly to the older "Colonial" bushel used up to 1900, but to the weights of the lots in which commodities are traditionally traded.

The following tables contain most of the Sierra Leone measures.

Basic Measures of Volume

4 cigarette cups	..	..	..	1 penny pan
2 penny pans	..	..	..	1 threepence pan
5 threepence pans	..	..	..	1 kettle (21 lb. clean rice)
2 kettles	..	..	..	1 can or tin
2 cans or tins	..	..	..	1 bushel (84 lb. clean rice)

Standard nett weights per bag

Cocoa	..	..	..	140 lb.
Coffee	..	..	..	132 lb.
Ginger	..	..	..	212-235 lb.
Groundnuts (undecorticated)	..	..	..	77 lb.
Palm kernels	..	..	..	182½ lb.
Rice (clean)	..	..	..	168 lb.
Rice (paddy)	..	..	..	120 lb. (often 150 lb)

"Bushel" weights

Benniseed	..	..	..	60 lb.
Chillies (dried peppers)	..	..	..	28 lb.
Groundnuts (undecorticated)	..	..	..	36 lb.
Guinea Corn	..	..	..	84 lb.
Kola nuts ("measure"—8 kettles)	..	..	..	176 lb.
Maize	..	..	..	72 lb.
Palm kernels	..	..	..	60 lb.
Rice (clean)	..	..	..	84 lb.
Rice (paddy)	..	..	..	60 lb.

Miscellaneous Measures

"Bundle" of pisasava	..	..	..	56 lb.
Bottle—reputed quart	..	..	..	1/6th gallon
Bottle—reputed pint	..	..	..	1/12th gallon
Cigarettes cup	..	..	..	8 to 9½ oz. of rice
Kettle (clean rice)	..	..	..	21 lb. (2 gallons approx.)
Tin (or can):—				4 gallons
of honey	..	..	..	48 lb.
of palm oil	..	..	..	38 lb.

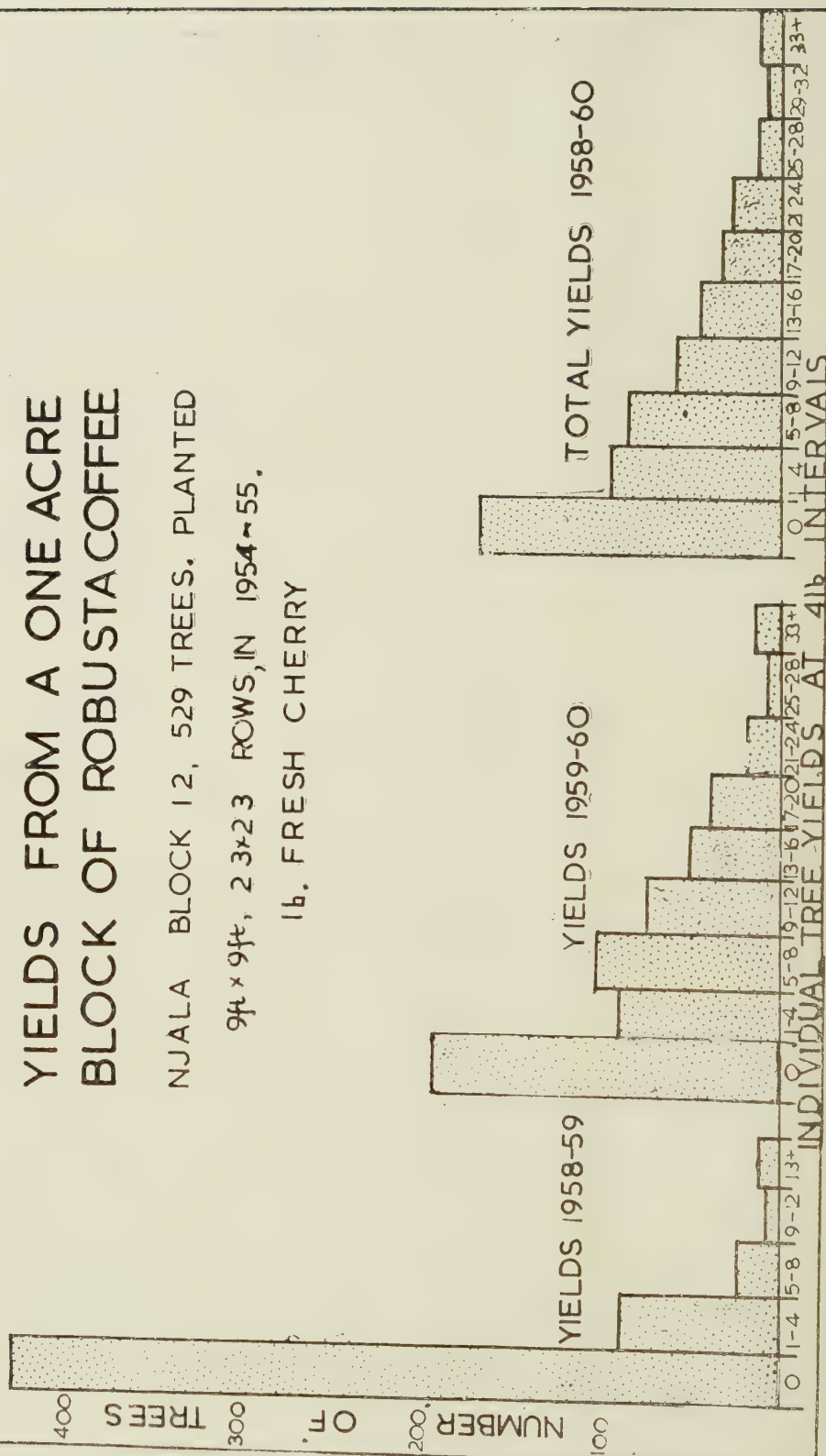
APPENDIX III CONT

YIELDS FROM A ONE ACRE BLOCK OF ROBUSTA COFFEE

NJALA BLOCK 12, 529 TREES. PLANTED

9ft x 9ft, 23x23 ROWS, IN 1954-55.

1b. FRESH CHERRY

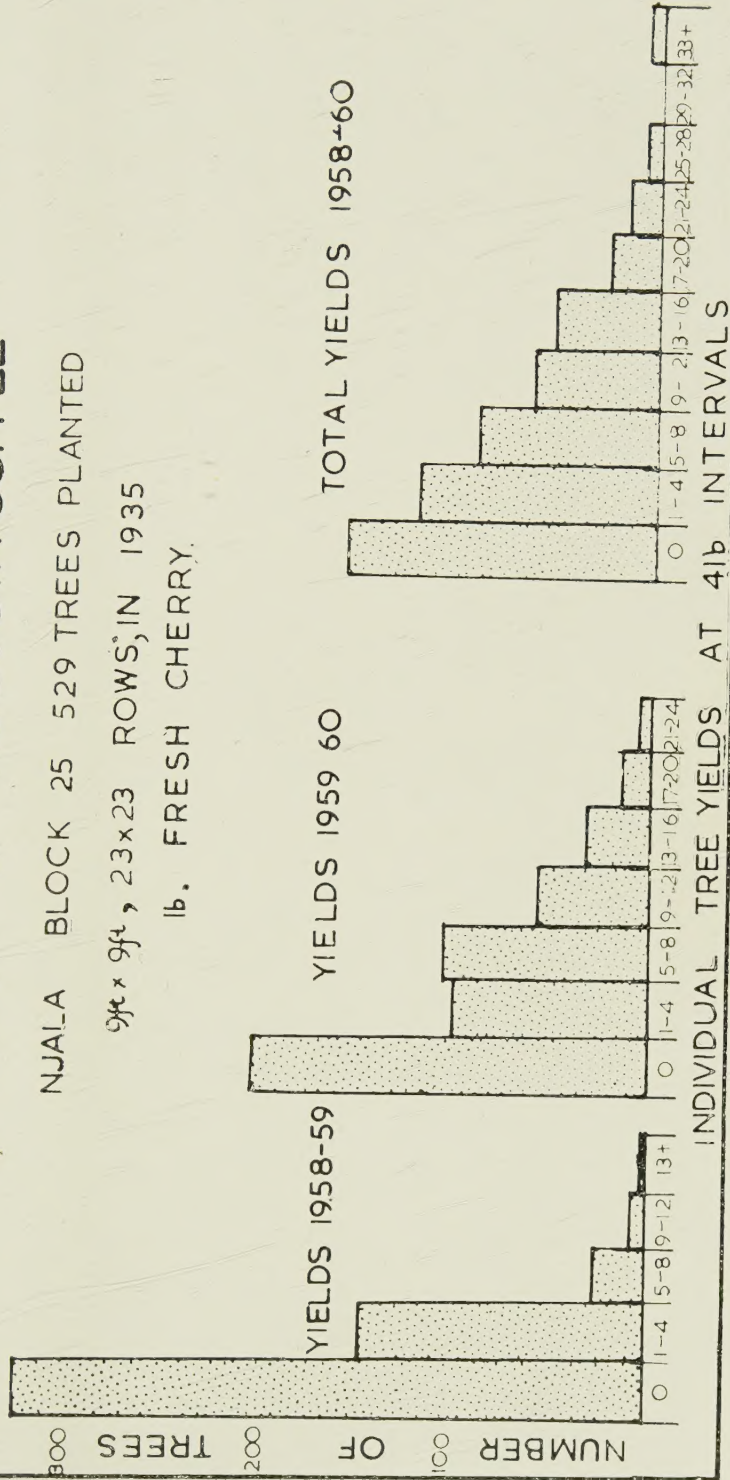


APPENDIX III CONT YIELDS FROM A ONE ACRE BLOCK OF ROBUSTA COFFEE

NJALA BLOCK 25 529 TREES PLANTED

9ft x 9ft, 23x23 ROWS, IN 1935

lb. FRESH CHERRY



*To be purchased from the Government Bookshop, Water Street, Freetown, and from
the Crown Agents for Oversea Governments and Administrations,
4, Millbank, Westminster, London, S.W. 1.*

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1961

